millions of tons
1,500
1,400
1,300
1,200
1,100
1,000
900
800
1950
'51
'52
'53
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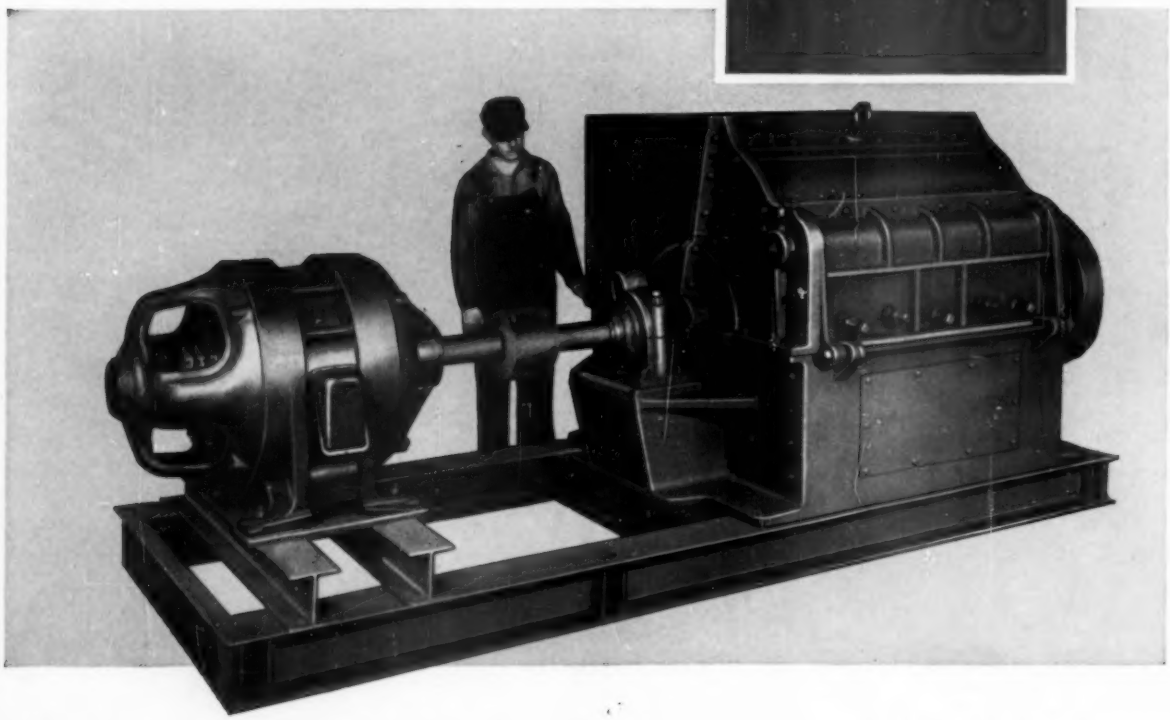
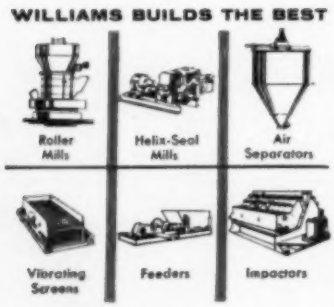
'60

Complete size reduction... from start to finished product... in a single Williams Hammer Mill



Cut costs as much as 50% on production... up to 75% on equipment



In all normal crushing operations, a Williams heavy duty hammer mill can take most material and, *in a single pass*, reduce it to finished size! Production economies alone, in labor, power, maintenance, as well as stepped up output of better quality and more uniform products, will *cut costs up to 50%*.

Savings in original installations, *as high as 75%*, can also be expected. By making primary and secondary crushers unnecessary, a Williams hammer mill will eliminate all extra conveyors, drives, other equipment, special foundations and additional housing.

Williams hammer mills are built for daily rough and rugged service. Extra heavy manganese steel liners and breaker plates, oversize shafts, massive parts and reinforcements, all defy shock and wear, reduce downtime and replacements to nil.

If the cost price squeeze is one of your problems, get the facts about Williams hammer mills. *Write now for catalog.*

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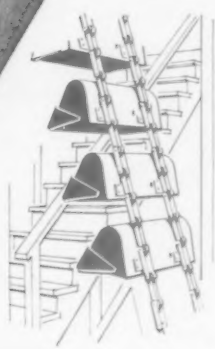
LINK-BELT long-pitch SS class bushed chain . . .

BUILT FOR THE LONG, HARD GRIND

FLANGED ROLLER TYPE for applications where the chain will operate on various type rails.



PLAIN ROLLER TYPE for applications where the chain will operate in channels, angle guides or vertically.

WHERE the going is tough—especially where abrasion and round-the-clock operation are encountered on long, slow-speed conveyors and elevators—long-pitch SS class chain pays off in low initial cost and maintenance, fewer shutdowns. These heavy-duty chains conform to all commercial standards for clearance and fits; pins and bushings have flats and notches to lock them against rotation in the sidebars.

Industry's most modern chain-producing facilities enable Link-Belt to design and build special-type chains and sprockets to suit specific applications. Get full facts from Catalog 1050. Write direct, or call your Link-Belt office or authorized stock-carrying distributor . . . in the yellow pages of your phone book, under CHAINS.

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January 1960

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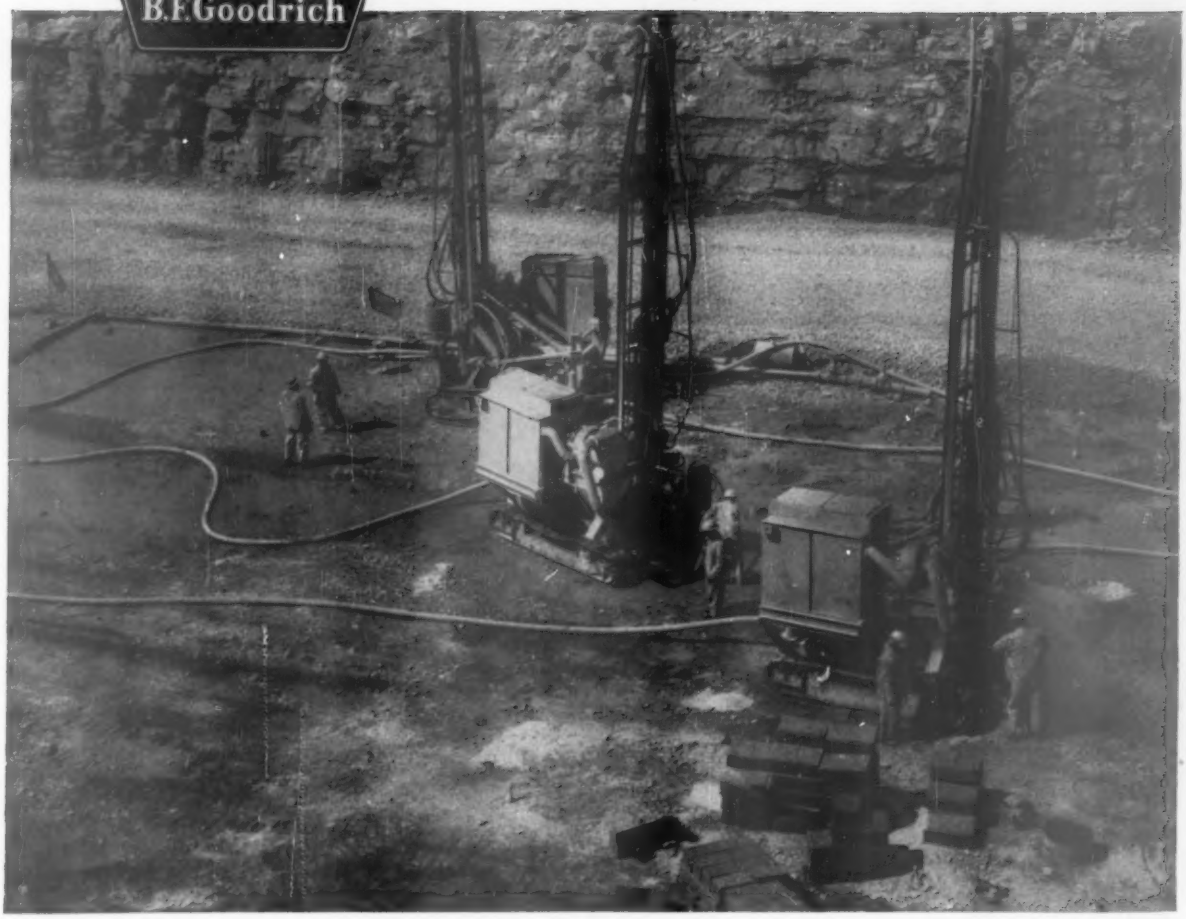

Hose helps dig a ditch that will detour a river

B. F. Goodrich improvements in rubber brought extra savings

THOSE machines are drilling holes for dynamite charges to blast out rock. When the job is done, a mighty river will take a detour down this newly formed channel. Power for the machines comes from compressed air, carried by hose. But on jobs like this, rubber hose used to go to pieces in no time.

When heat from the compressor got into the hose, it would harden the rubber, breaking it into loose, gummy particles that clogged the machine, put it out of action.

B.F.Goodrich engineers went to work on the problem. By adding, subtracting and changing proportions of rubber, they found a special compound for the hose that stands heat without scorching or hardening.

Hose lined with this new rubber was made and put to work. On jobs where air hose used to go to pieces in weeks, B.F.Goodrich hose now lasts months, even years.

Thousands of feet of B.F.Goodrich air hose are in constant use on this job. It's been doing dozens of different jobs, and lasting longer doing them, even though it's dragged over rough, jagged rocks, soaked in water, sometimes battered by flying pieces of rock.

Your B. F. Goodrich distributor has the exact specifications for the B.F.Goodrich air hose described here. And, as a factory-trained specialist in rubber products he can answer your questions about all the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-769, Akron 18, Ohio.*

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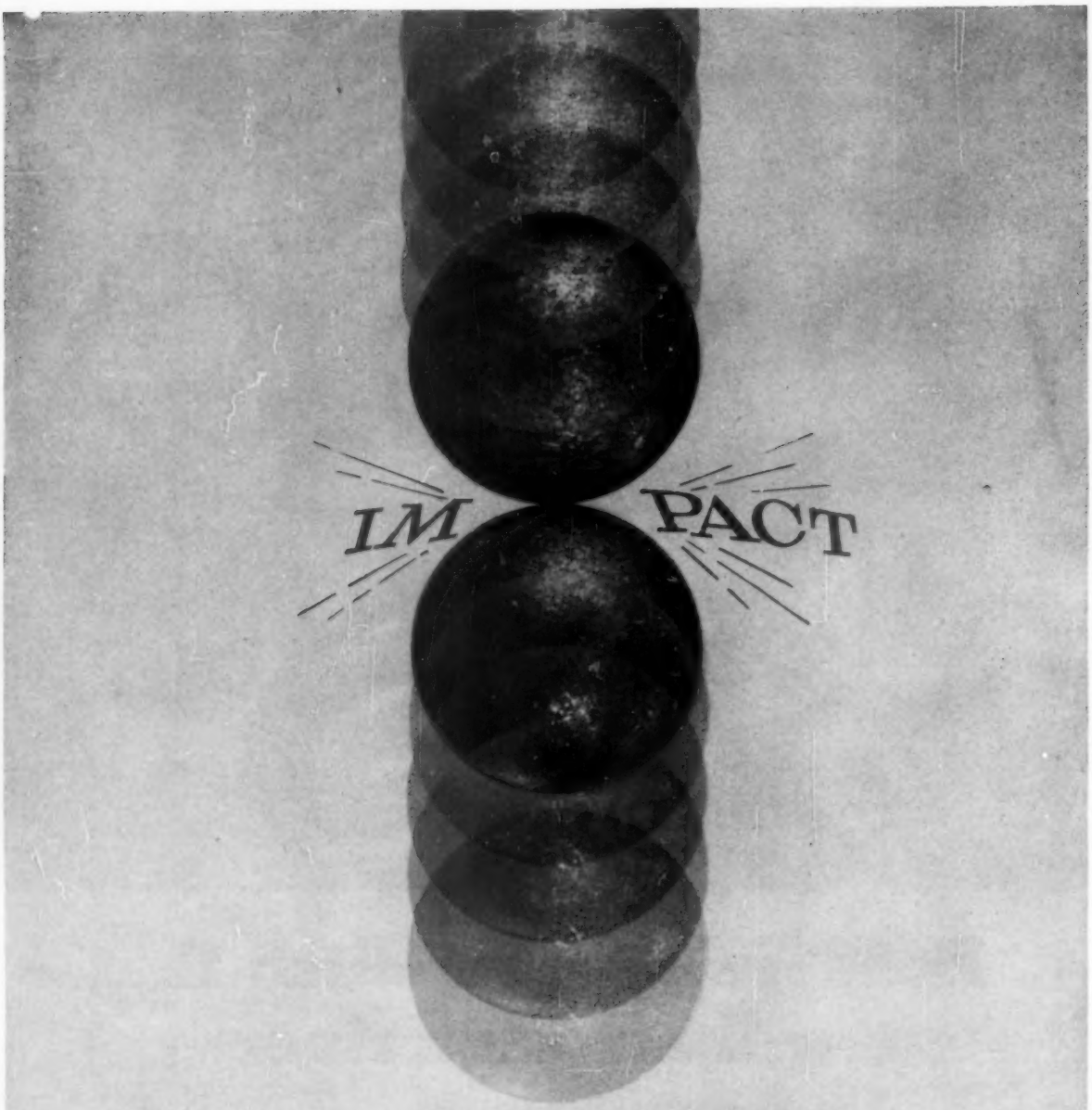

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Coates Grinding Balls have been proven "best buys" in actual production run tests, yet Coates conducts a continuing research program to improve its already highly rated product.

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Write for prices . . . All sizes—½" to 5" carried in stock for immediate shipment.

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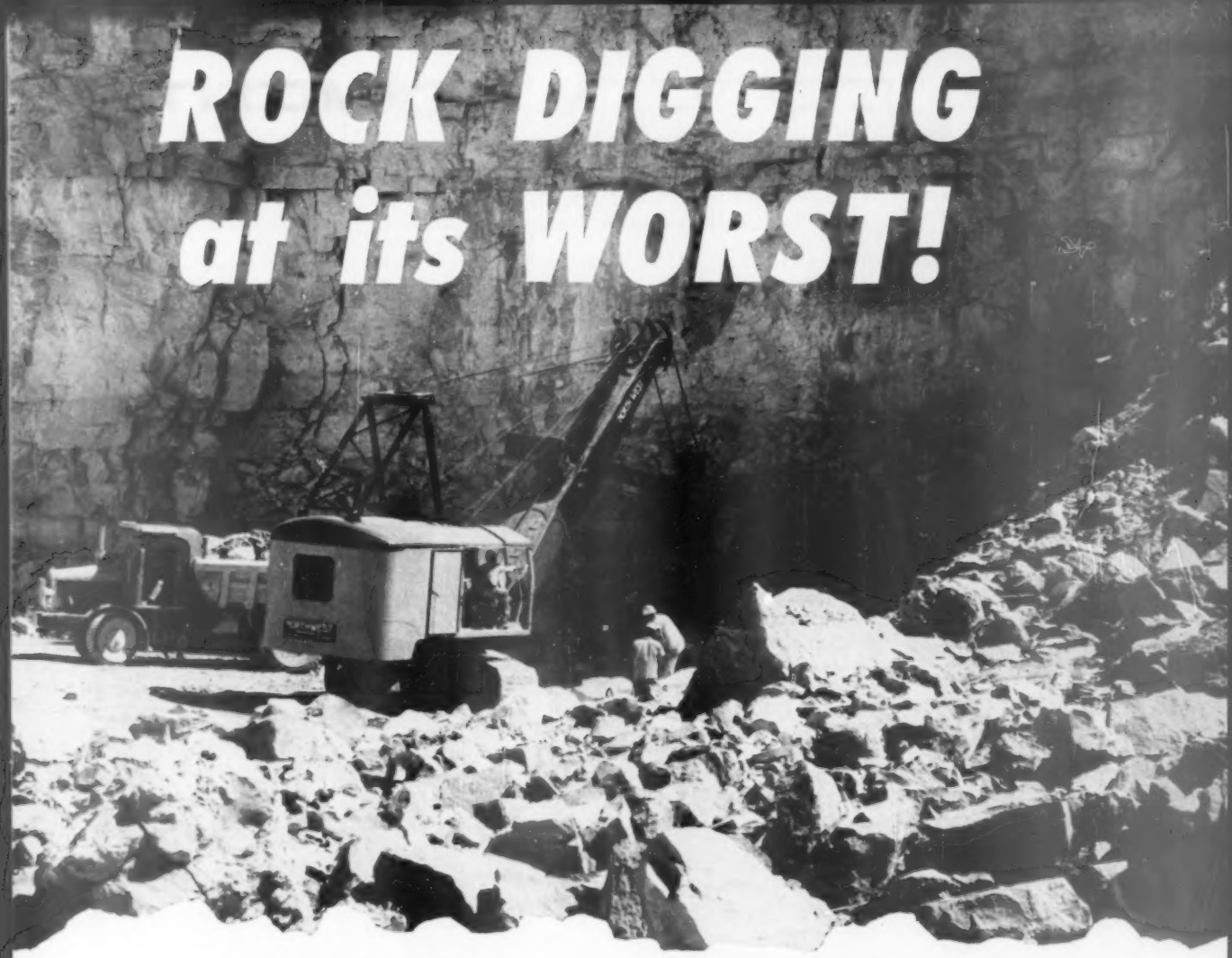

Certainly no one is more familiar with the problems of handling rock than the cement producer. This big 80-D Northwest is in the pits of the Marquette Cement Co., at Cowen, Tenn., loading out limestone from 100-ft. face.

Marquette Cement is a long-time user of Northwest Shovels. This is the 11th Northwest that Marquette has bought. Here is another repeat order by a company that knows its business—a repeat order that testifies to the high quality of Northwest Performance.

The Northwest 80-D is outstanding as a rock shovel. The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. It's a clean cut through the bank without delays or restarts. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting smooth and easy, reducing spillage. The Feather-Touch Clutch Control takes the heavy work out of throwing drum clutches without resorting to compressors, pumps, valves or other delicate mechanisms. Northwest Steering reduces the delays of relocation. These are just a few of the advantages that have put so many Northwests in gravel pits and quarries all over the Country. They help to assure maximum crusher production!

Why not find out why so many contractors and gravel producers in the Country have bought Northwests again and again? Let us give you the full story.

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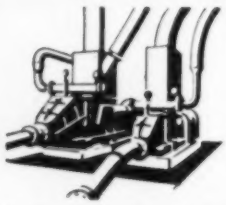
for the process industries



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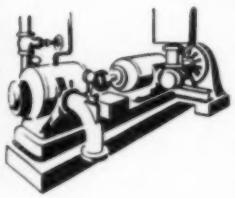
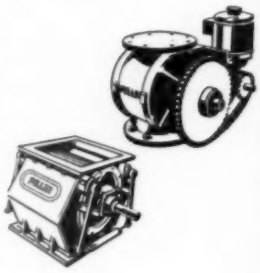
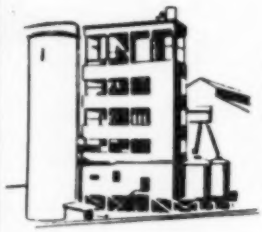


Fuller Rotary Compressors and Vacuum Pumps are vibration-free, can be installed anywhere, even on balconies. Fewer moving parts mean minimum maintenance. Compressors and Vacuum Pumps handle air and gases from 30 to 3300 cfm at pressures to 125 lb. gage. Vacuums to 29.95 in. (referred to 30-in. barometer).

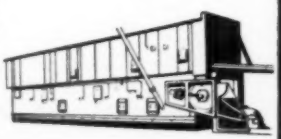
Fuller Vane-type and Roll Feeders . . . for volumetrically controlled feeding of a wide range of dry pulverized or granular materials. Also Fuller Rotary Valves . . . used under silo deck slabs and bins to permit the free flow of pulverized materials which tend to arch, such as lime and cement raw materials.





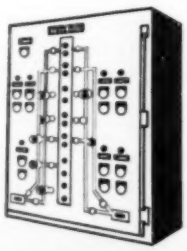
Fuller Preheaters, Humboldt Suspension Type . . . for preheating dry, pulverized Portland cement raw materials with rotary kiln waste gases.

Fuller Horizontal and Inclined Grate Coolers are compact, easily installed for fast, efficient cooling of materials such as nodulized phosphate rock, pebble lime, ores, dolomite, iron nodules and Portland cement clinker from 2800°F. or higher to any desired point within a reasonable range of atmospheric temperature.



Fuller-Material-Level Indicators signal audibly and visibly when materials reach a predetermined high or low level. Controls conveyor motors, valve circuits, etc.

Fuller Control Panels permit automatic, remote, one-man control of multiple operations. Easily-read panel permits visualizing flow of material to storage or from process bins.



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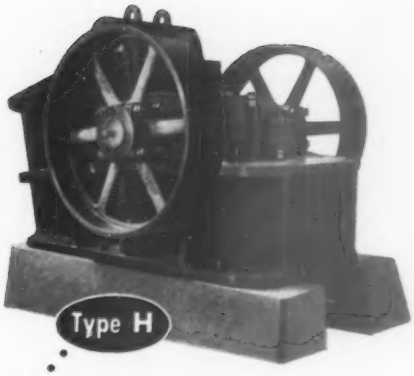
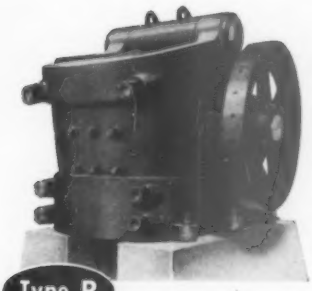
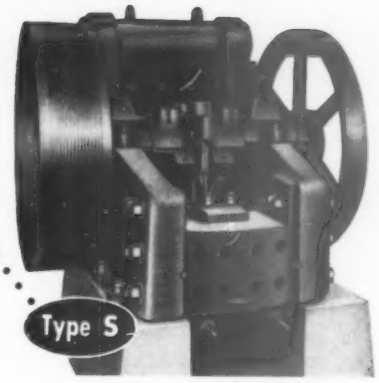
Traylor-made Jaw Crushers

Some of the features incorporated in Traylor Jaw Crushers are jaw plates of the Traylor curved type—the pitman shaft is made of annealed open hearth forged steel. The swing jaw is made of cast steel of extra heavy design for maximum strength. For more of the features of Traylor Jaw Crushers, write to Traylor today.







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SON — Ray Wertz' current "PAYLOADER" is this Model H-70.

William Wertz and his son, Ray are friendly competitors in the sand and gravel business.

There's one thing they always agree on — it pays to use a "PAYLOADER"!

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LIKE FATHER LIKE SON

For 45 years the name of William Wertz of Wilmot, Wisconsin has meant "Sand and Gravel" in Kenosha County. And for the last fifteen years "PAYLOADER" tractor-shovels have been a continuous part of the Wertz operations. His first unit — a Model HL — was used for ten years. "That's the machine you couldn't break", he says.

Ray Wertz, the son, was in partnership with his father but is now well established with his own sand and gravel business at nearby Bassett. Like his father, Ray is a proven-in-the-pit "PAYLOADER" man. He says, "I learned about 'Hough's' while with my father, and when I went into business for myself I stuck right with them because I knew what they would do."

"This Model H-70 is my second. It's bigger and faster than the Model HH I had. It feeds the crusher (100 tons per hour), loads trucks in the pit, loads customers trucks and moves material from the crusher to stock pile. The 'PAYLOADER' is engineered as good as is possible to design a machine. It will be a long time before anyone builds a machine to beat it."

Pit and plant operators, like the Wertz family, have been profiting with proven "PAYLOADER" work-ability and dependability for 20 years. Today's complete "PAYLOADER" line — ranging up to 12,000 lb. operating capacity — includes a type and size for every size job.

Your nearby Hough Distributor is ready to serve you with complete parts and service facilities backed by Hough field service personnel.

FATHER — William Wertz — a 45-year-veteran in the sand and gravel business and a "PAYLOADER" owner for 15 years—operating this Model HU in his Wilmot pit.

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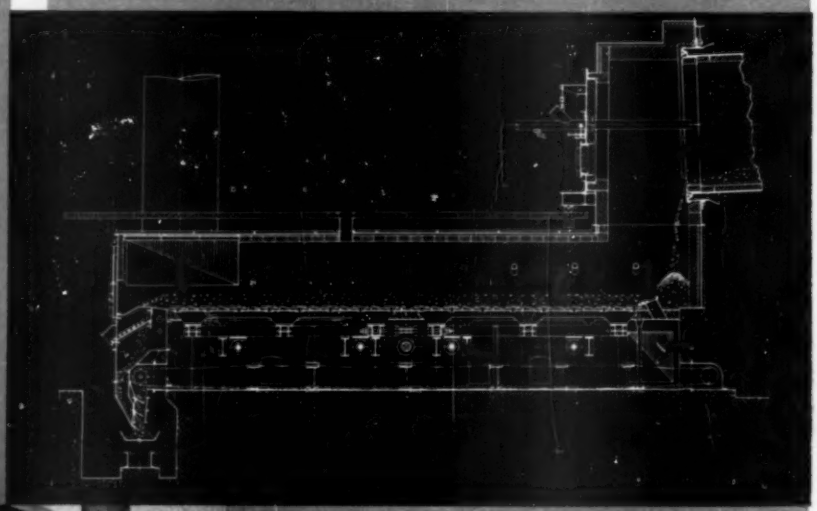
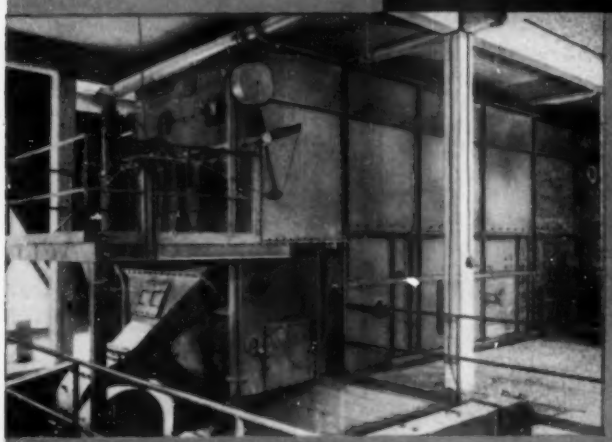
FOR CEMENT CLINKER





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WHAT'S HAPPENING

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

January, 1960

Micropores that "let the cool air in" are the boast of manufacturers of products besides cigarettes. Last fall a waterproof textile that can breathe made its appearance on the market. Introduced in the form of rainwear, snowsuits and protective clothing, it consists of a thin film of an unusual microporous plastic laminated to a regular fabric. ESB-Reeves of Yardley, Pa., is producing the new material, using the process developed by Electric Storage Battery Co., one of the firm's parents. The method utilizes cornstarch and resin to form a plastic honeycombed with billions of tiny holes. The firm sees many applications in laminating this film to fabric—filters, bandages, water purification equipment and blood oxygenators among them.

Figments of engineers' imaginations take many shapes. For instance, there are the big floating balls that are being tried to transport cargo downriver in Canada. Eight-ft. diam. fiberglass spheres are being used experimentally by Crown Zellerbach Canada Ltd. to ship pulpwood from sawmills in the interior to paper mills at Ocean Falls and Elk Falls. If successful, the method would permit utilization of all parts of the tree, some of which are now wasted or burned. Although the balls aren't speedy, dawdling down the Fraser River at 2 mph. they have kept their cargo dry and there's another advantage—they're inexpensive, need no crew and burn no fuel.

Atomic radiation can make concrete harder. In fact, steel rod reinforcement is said to be made unnecessary. The late Dr. Simon L. Ruskin of Union Carbide Corp. developed a method of treating portland cement concrete with atomic radiation at Brookhaven National Laboratory under a permit from Atomic Energy Commission. An application has been described in which a hard metal, such as titanium oxide, is mixed in the cement with a softer binder metal, such as powdered nickel. Under exposure to gamma rays, a metallic skeleton forms throughout the concrete.

It rained bulldozers and other heavy construction equipment in Kentucky recently. Showered over an area near Camp Breckenridge were 87 loads of equipment needed to build an airstrip. Planes—Air Force C-130s—dropped the loads which floated to earth on parachutes. Some of the big pieces needed six 100-ft.-wide chutes to ease their descent. The occasion, said to be the first mass air drop of construction equipment, was 100-percent successful. Although only 80 percent of the dropped equipment had been expected to come through in usable condition, every piece was in working order. Within 48 hours, a 60 x 2,500-ft. landing strip was built. Why this maneuver? It was a combat test by the 101st Airborne Division's 326th Airborne Engineer Battalion.

A steel mix is now as easy to make as a cake mix in your wife's kitchen. Very similar to the old Thermit process, this new mix is made up of iron ores, fluxes and alloys. While mild steel was the best the old process could make, International Ore Processing Co. claims that their steel mix can be used to make high carbon as well as stainless steels. The ingredients are relatively inexpensive as are the necessary furnace and ladle equipment, bringing the cost of high-grade steel down within the reach of the smallest shop.

Ultrasonic welding can join aluminum foil and sheet. One of the most difficult metals to braze, solder or weld, the new technique shows promise for making strong welded joints. The Aluminum Co. of America developed the new process which can make continuous welds on thin materials. Only preparation needed for most aluminum stock is degreasing.

Crude asbestos fibers are a Canadian's answer to the cigarette filter question. Firmin Dumortier, fired by the ambition of checking lung cancer, tried countless experiments before settling for asbestos. Milled fiber, however, was not the whole answer. Only the long, silky filaments of crude fiber screen out 90 percent of tars and nicotines in tobacco. Mr. Dumortier claims that his invention does not alter the taste of cigarettes.

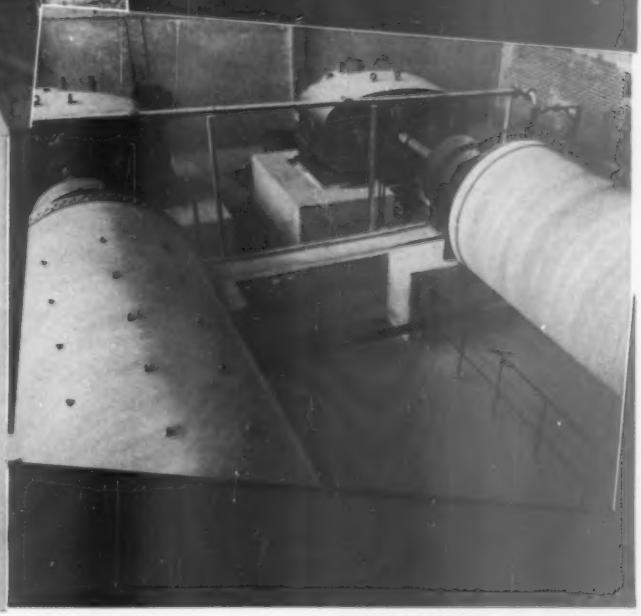
State highway departments are evaluating a new latex mortar. If it proves successful in a number of applications in widely separated areas, it may be economical answer to patching concrete pavements. A weather, wear and chemical-resistant mortar is prepared by mixing a liquid latex emulsion into concrete. When this mortar is used to make patches on concrete surfaces it can be applied as thin as ½ in. with good durability. Apparently, the mixture has a coefficient of expansion close to the base material, with the latex contributing desirable plasticity and adhesiveness to stand up under heavy traffic.

Sand is used to break ice-jammed rivers and harbors in Russia. Used foundry sand which is normally loaded with carbon, core oil and minute fragments of metal is spread on the ice by low-flying planes. According to the Russians, the sand grains adsorb enough of the sun's heat to melt their way down through the ice to make a honeycomb structure. Alternating freezing and thawing in this rotten ice weakens it enough so that it is broken up and carried away by flowing water or the pressure of ice in the river above.

Refractory brick can be prestressed, widening its economic use. To take advantage of the great compressive strength of refractory brick, a German firm has developed a system for installing brick under stress. The process developed by Farbwerke Hoechst, AG. consists of a well-developed technique for controlled heating and expansion of the kiln, tank or other vessel to be lined. Then while the shell is hot it is lined with brick laid up in a special heat-resistant, compression-tolerant mortar. As the steel shell cools, it contracts to place the brick under compression. While the process sounds simple, key to its success is the mortar which must hold up under extremes of temperature while maintaining the bond between bricks and between brick lining and steel shell.

SMIDTH

rotary kilns... grinding mills and symetro drives for grinding mills



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EDITORIAL

by GEORGE C LINDSAY

There's no curb on the vision market

AS A NEW DECADE BEGINS, so begins a widening range of possibilities for your success. Looking back, this could have been said at the beginning of every decade. But no decade ever has been just like another; each presents new challenges and new opportunities.

Similarly, beginning this decade, you'll begin to see the formation of a brand new set of problems you'll have to face. Advancement begets difficulty. And you may as well make up your mind that there'll be advancement during the 1960's—plenty of it.

Your success for the next 10 years will depend directly upon how you approach and solve the new problems, along with the old ones. You alone hold the key to your own future. What's it to be?

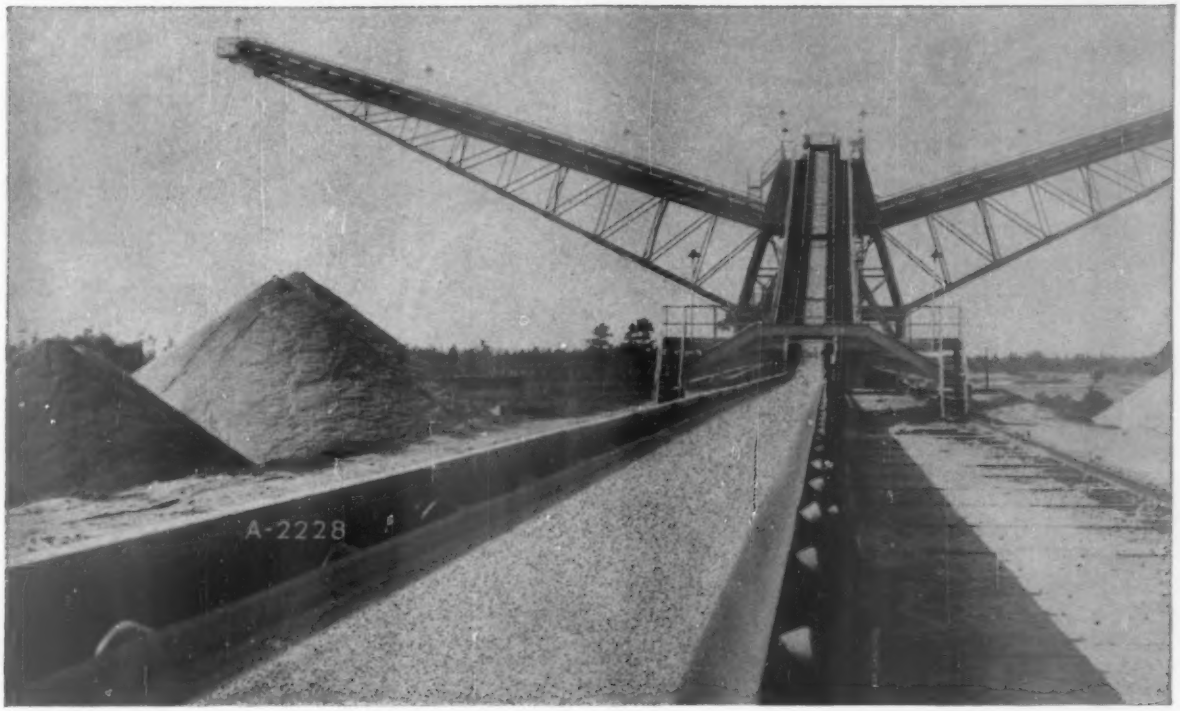
Study the methods of the operators who have proved themselves successful, and you'll find first an insatiable desire to advance. They're satisfied with nothing less than success. Their programs and plans, thorough though they are, are never static nor staid because every opportunity for advancement is anticipated. That's a big reason why they're effective.

But there's no curb on the vision market, when it comes to planning for success. Can't you see the revolution that will take place in the rock products industry during the 60's? Isn't it evident that efficiency, quality, safety and service will be stressed to a degree unheard of before in the industry's history? To be factual, you're going to have to run with your business this next decade, or you are doomed. Better start preparing for it—now!

A good way to begin is to take advantage of the aggregates industry conventions and shows that will be in Chicago during February. Here's an immediate chance to hear industry leaders describe their programs and relate their successes. You can see all the best in modern, efficient—some of it revolutionary—equipment that is available to help you do the best job. Check our preview of that equipment elsewhere in this issue.

After the conventions, go home and plan. Program your future operations with every ounce of vision you can muster, remembering that vision doesn't cost you a cent. Your success is assured, if you do so properly—and so is that of the whole industry.

STEPHENS-ADAMSON



BELT CONVEYOR SYSTEMS...lower handling costs!

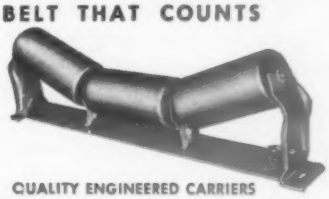
Nearly a half-century ago STEPHENS-ADAMSON engineered its first sand and gravel conveying system. Today, that system is not only performing efficiently but the company is a loyal S-A customer.

Since that first system was installed STEPHENS-ADAMSON engineers have engineered and built innumerable rock products handling systems — each calling for certain innovations, because as you know — every operator's handling problem is a little different. The final result with each new S-A installation is the same however . . . bulk materials are handled at the lowest cost per ton.

Profitable conveying of bulk materials over the belt is dependent on what's under the belt in quality-engineered conveyor components. S-A conveyor components contain features — (many of them patented) — found in no other conveyors on the market.

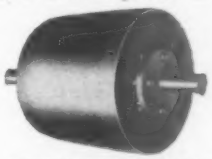
Write for bulletins 355 & 558 covering belt conveyor components.

IT'S WHAT'S UNDER THE BELT THAT COUNTS



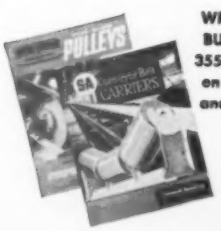
QUALITY ENGINEERED CARRIERS

S-A manufactures a complete line of carriers, quality-engineered with features found in no other carrier regardless of price.



S-A CURVE CROWN® PULLEYS

Maximum belt training effect with minimum belt stretch and wear are provided with exclusive S-A CURVE CROWN design.



WRITE FOR BULLETINS 355 and 558 on Carriers and Pulleys

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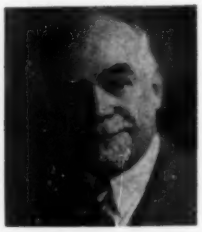
ROCKY'S NOTES

by NATHAN C. ROCKWOOD



Basic issue in management-labor controversies

WHETHER OR NOT THE STEEL WORKERS' STRIKE has been finally settled when this is published, or how it may be settled, the basic issue will still be with us. It will not be solved soon; it will arise in some form in every management-labor controversy from now until both sides are philosophical enough to meet it in an open-minded public-spirited manner. At present, there is obvious lack of understanding and of good faith on both sides; hence neither side trusts the other.

That basic issue is: "How much voice or influence is organized labor entitled to in the management of an industry or any individual enterprise in an industry; or is it entitled to any say?" This issue is somewhat obscured by the attitude of both sides in the steel industry controversy, but is clearly inferred from the report to the President by his special Board of Inquiry into this dispute. Since the separate settlement by the Kaiser company, the issue is more clearly apparent.

The Board concluded that there were two basic issues: (1) economic, involving possible wage increases; (2) contract clauses, involving work rules and work schedules. The first, all agree, could be readily solved by conceding to labor all the expected increase in production efficiency. The other is the one that will not be satisfactorily solved in this case, or in others to come, until the whole theory of private capitalistic enterprise is comprehended and practiced by both management and labor.

To be specific, the Board's report is quoted as follows: "Section 2-B, which is reproduced below, was incorporated in the U. S. Steel agreement for the first time in 1947. The clause resulted from the apparent impossibility of incorporating in a national agreement the multitude of local rules and practices that had been established at individual plants. These practices dealt with such matters as crew size for specific operations, relief time, spell arrangements and other working conditions vital to the cost of operations and to harmonious labor-management relations.

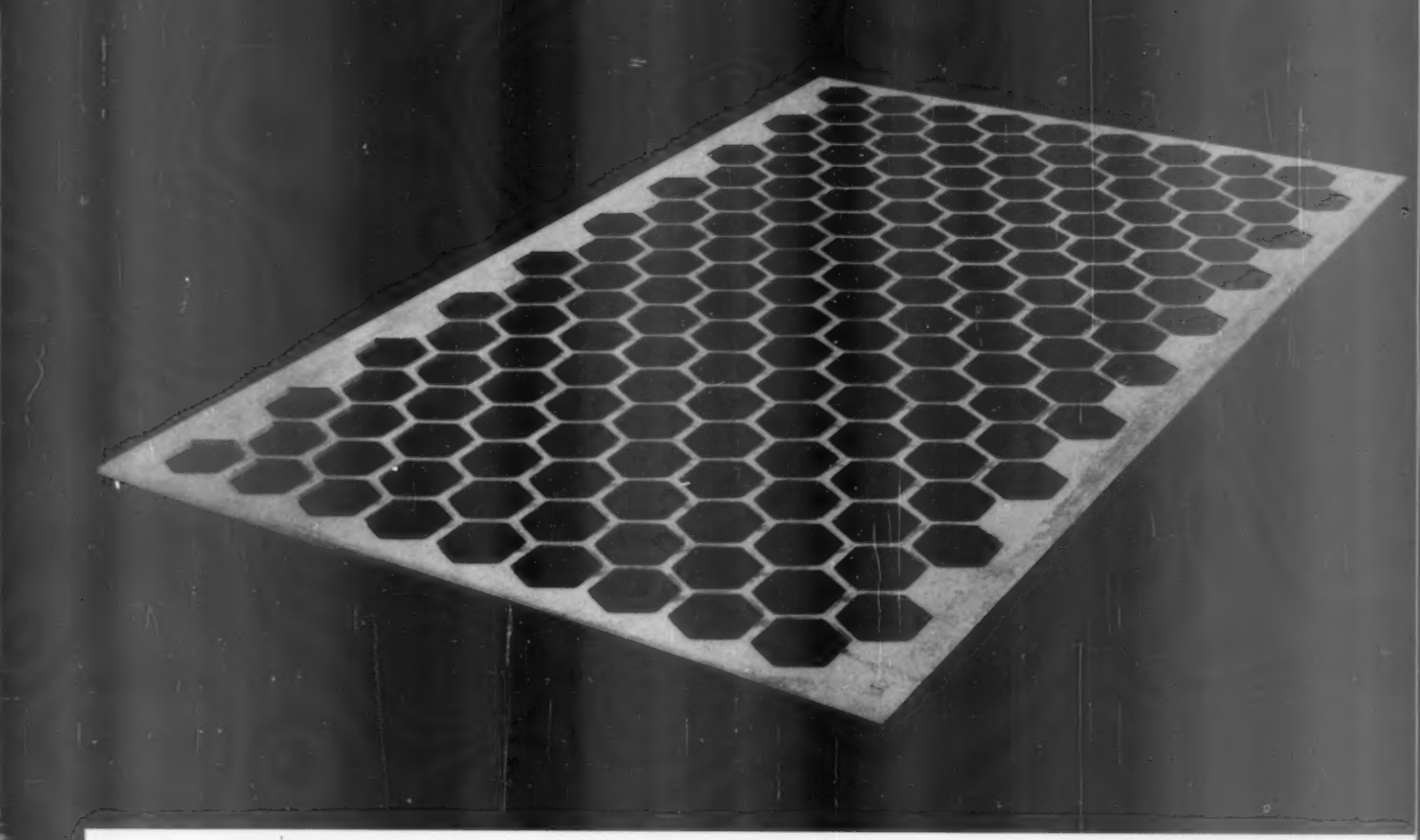
"The term 'local working conditions' as used herein means specific practices or customs which reflect detailed application of the subject matter within the scope of wages, hours of work or other conditions of employment, and includes local agreements, written or oral, on such matters. It is recognized that it is impracticable to set forth in this Agreement all of these working conditions, which are of a local nature only, or to state specifically in this Agreement which of these matters should be changed or eliminated."

Then follows three paragraphs attempting to outline the limitations of management in changing rules and working conditions. It will be remembered that this agreement was made in 1947 when labor was riding high both as a result of shortages created by war and of a sympathetic national administration. In it management attempted to preserve some of its responsibility by these two clauses:

"(4) The company shall have the right to change or eliminate any local working condition if, as the result of action taken by management under Section 3—management, the basis for the existence of the local working condition is changed or eliminated, thereby making it unnecessary to continue such local working condition; provided, however, that when such a change or elimination is made by the company any affected employe shall have recourse to the grievance procedure and arbitration, if necessary, to have the company justify action.

"(5) No local working condition shall hereafter be established or agreed to which changes or modifies any of the provisions of this Agreement. In the event such a local working condition is established or agreed to, it shall not be enforceable to the extent that it is inconsistent with or goes beyond the provisions of this Agreement, except as it is approved by an International Officer of the

Please turn to page 160



For rock products screening...

Cross HEXCREEN* gives more uniform sizing, greater capacity

If you have been using woven wire screens or perforated metal screens with square or round openings, you will find that you can increase capacity, get more accurate sizing with CROSS HEXCREEN. The unique configuration of CROSS HEXCREEN (hexagonal shaped perforations), gives you more open area and less weight than equivalent square or round hole screens, yet provides the sizing accuracy of round type (see example at right).

CROSS HEXCREEN is specially designed for sizing granular products such as coal, coke, sand, gravel, crushed stone, slag, limestone, minerals and ores. CROSS perforated steel screens, made from long wearing CROSS Special Analysis Steel, are available in a wide range of sizes with uniformly spaced square, hexagon or round perforations, staggered for increased capacity and efficiency. For additional information on CROSS Perforated Screens write for complete catalog.

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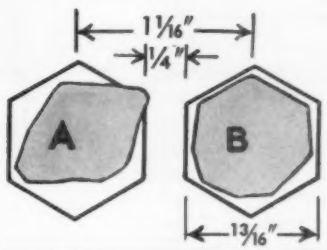
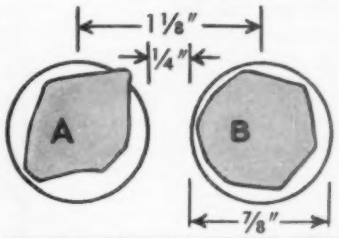
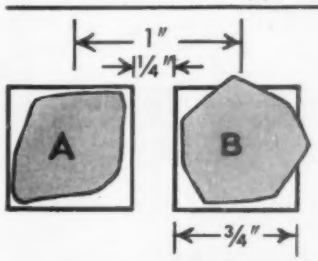


13/16" Hexcreen Rejects A, Passes B, has 58.5% open area.



7/8" Round Rejects A, Passes B, has 54.8% open area.



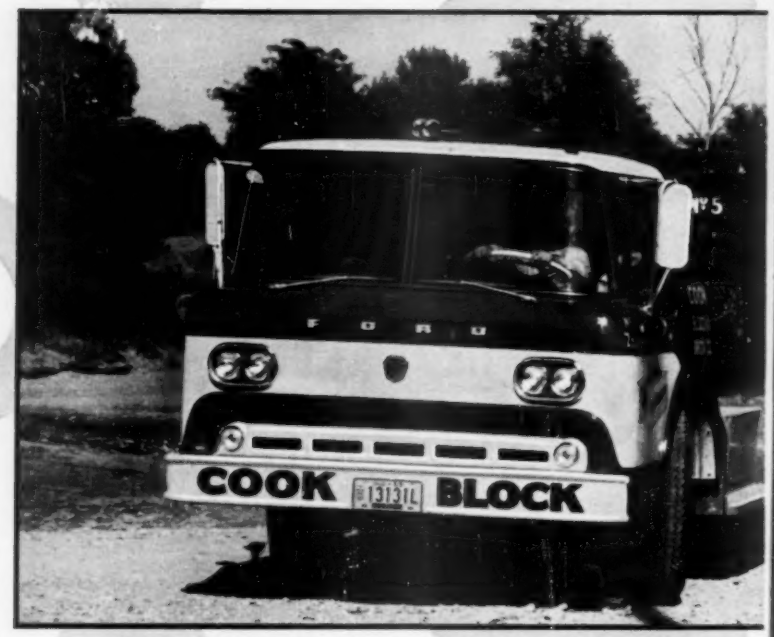
3/4" Square Passes A, Rejects B, has 56.3% open area.

Here's another reason why Ford Trucks are your best buy!

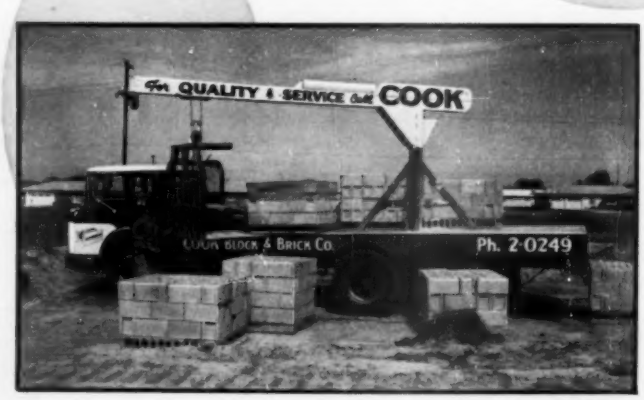
"OF ALL THE MAKES WE'VE TRIED FORD TRUCKS GIVE US THE LOWEST MAINTENANCE COST!"

ANOTHER REPEAT BUYER OF FORD TRUCKS

Virgil E. Cook, owner of Cook Block and Brick Co., is convincing proof that there is still plenty of opportunity in American business for those sound planning, hard working individuals who want to own their own business. Starting from scratch just 13 years ago, he now owns and operates one of the largest concrete products plants in Eastern Indiana. The workhorses in his fleet of 16 trucks are three Ford Tilt Cab Tandems that are used to haul sand and gravel to the plant and make deliveries in and around Anderson.



Hard-working Ford CT-950 tractor leaves Cook gravel pit with 18 yards of aggregate. Aluminum walking beam and rubber suspension system of tandem axle assembly reduce chassis weight, permit higher legal payloads.



Cook's CT-850 with special flat-bed body and Side-O-Matic unloader delivers blocks right to the job site. Unit carries 600 concrete blocks and spots them where needed.

"Our experience has proved that Ford Trucks can be operated at substantially lower maintenance costs than any other make we've tried. And, equally important in a fleet like ours, we find that our Fords spend much less time in the shop. None of the Ford units purchased since 1958 have been in for major repairs and I am still amazed at the way the older ones keep going.

"The best truck we've ever owned is a 1954 Ford C-700 that consistently carries a load of 350 to 400 blocks over all types of terrain. In spite of this severe work it ran 125,000 miles before we replaced the engine. This unit now has over 140,000 miles on the original ring gear and pinion and it went 60,000 miles before we relined the brakes and put in a new clutch. This is outstanding mileage when you consider that we've realized as little as 12,000 miles from competitive ring gear and pinion sets. Clutch and brake life obtained with other makes in identical service was only 20,000 miles. It's results like this that keep our costs low and convinced us that we should stay with Fords when we bought our bigger trucks in '58.

"Our 1958 and 1959 Ford Tilt Cab Tandems give every indication of equalling or surpassing the fine records set by the C-700. The two CT-950 tractors hauling sand and aggregates to our processing plant breeze through traffic and take the hills like they weren't there at all. Our CT-850 equipped with a flat-bed body has the power and traction to deliver finished products anywhere. With Ford's tilt-cab design we get a real plus as far as payload is concerned because we can carry at least 2,000 pounds more weight on the front axle.

"We buy Ford Tilt Cab Trucks because we think they're the best engineered and most modern gasoline trucks in the heavy-duty field. Here at last is a truck built to permit big legal payloads with enough power to move these loads at economical speeds. We pride ourselves on our modern and efficient equipment and consider our Fords one of the most valuable assets of our business."

'60 Fords are built for longer life . . . with Certified Durability!

Whatever your job . . . wherever you do it . . . you'll discover just as Mr. Cook did, that Ford Trucks are the best investment for your transportation dollar.

Certified results of tests conducted by America's leading independent research organization (name available on request) confirm the fact that Ford Super Duties have been refined for still more durability! Automatic radiator shutters, improved electric fuel pumps and redesigned wiring harnesses are typical of the advancements to be found in these units.

Automatic radiator shutters reduced the coolant temperature variation recorded in severe mountain road tests from a 79° range to a 20° range. Engine operation with coolant temperatures in the 167° to 187° range means less expansion and contraction, more efficient combustion and better lubrication . . . all of which contribute to longer engine life.

Dynamometer tests showed *no vapor lock* with Ford's submerged-type electric fuel pump at temperatures up to 200°. Incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under the same conditions. Shaker table tests plus constant exposure to oil, water and heat proved 1960 wiring harness to be *three times longer lived.*

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

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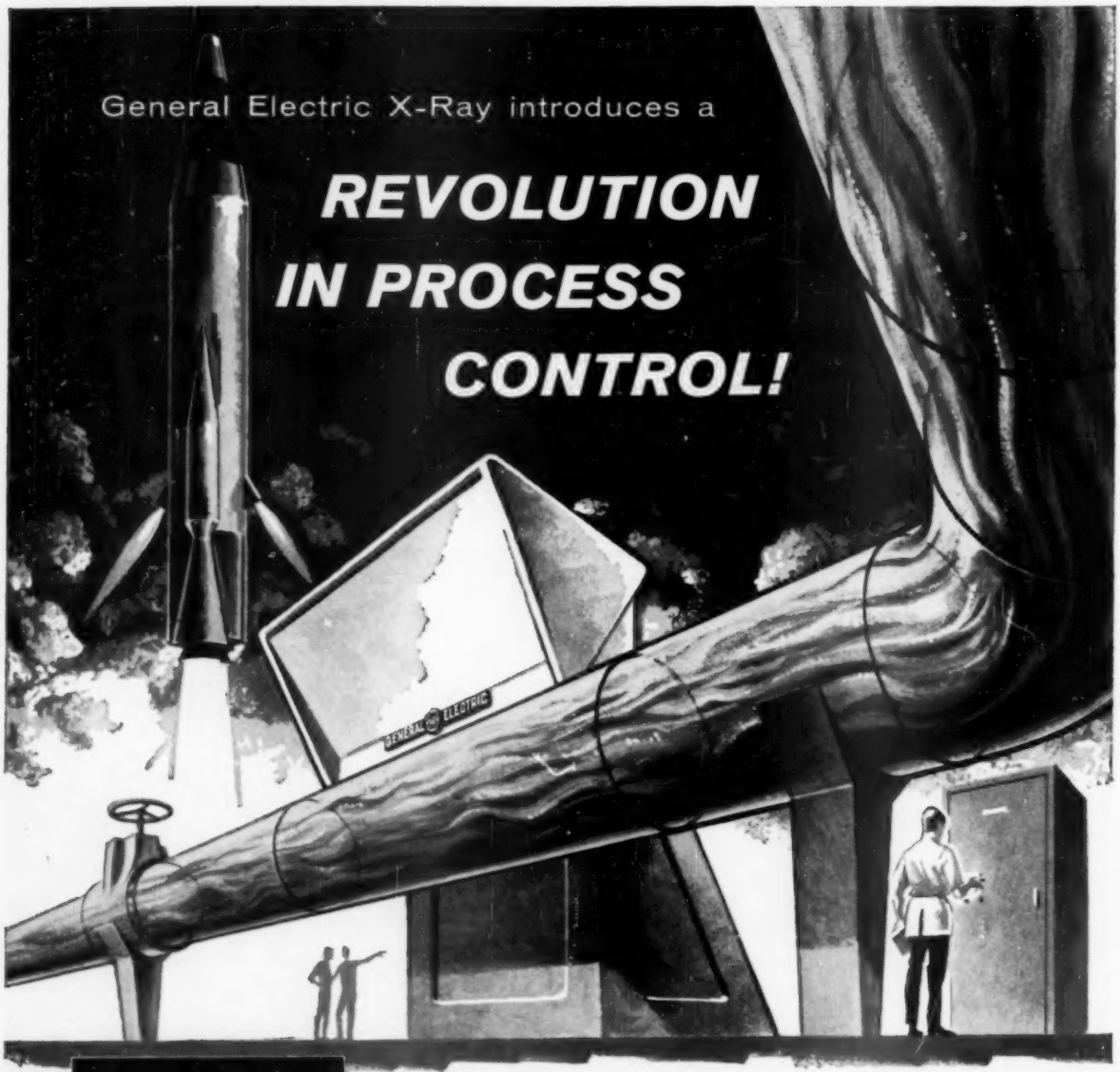
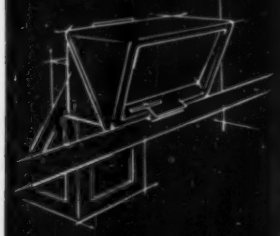
General Electric X-Ray introduces a

REVOLUTION IN PROCESS CONTROL!



Analyzes materials continuously, or in individual samples —



- gases
- liquids
- solids
- mixtures of all three
- flowing slurries
- moving strips or wires
- a host of other forms

XEG scans materials in production, writes an on-the-spot x-ray analysis of up to 5 elements simultaneously

Here at last are means for wiping out a long-standing blind spot in process control: *XEG allows moment-by-moment surveillance of materials composition, right on the production line* — can detect and measure up to five elements at a time! XEG is a new and revolutionary *x-ray emission gage* — another exclusive product of General Electric "know how." Lends itself to more applications than you can imagine. Reveals quality . . . delivers facts on composition for rapid-fire, continuous feed-back to process control. Yet XEG requires no skilled operator! Ask your G-E x-ray representative for full details on potentials. Or simply write X-Ray Department, General Electric Company, Milwaukee 1, Wisconsin, Room RP-14.

Progress Is Our Most Important Product

GENERAL ELECTRIC

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WASHINGTON LETTER

by EDGAR POE

Explosive Shipments Closer control over interstate shipments of explosives and radioactive materials may be given to the Interstate Commerce Commission. The Senate passed at the last session of Congress a bill amending the Transportation of Explosives Act, and the House may approve similar legislation at the 1960 session.

The Senate-passed bill placed shipments of radioactive materials and live viruses under ICC jurisdiction, and made private and contract carriers subject to the same penalties as common carriers. The measure calls for more stringent packing rules for carriers.

Mileage Grows As the great divided, multi-laned, stop-light free Interstate System moves along, the so-called ABC highway program—where the Federal Government puts up 50 percent of the cost and the States 50 percent—is showing a steady growth. The primary system has grown from 169,000 in 1923 to more than 256,000 miles. The secondary system has grown from 137,000 miles in 1944 to more than 554,000 miles.

Imports Double In 1958 steel exports by the United States dropped to 2,700,000 tons, while imports rose to 1,700,000 tons. In 1959 steel imports doubled U. S. exports.

South's Great Growth The Nation's Capital is watching with marked interest the South's industrial expansion. It is continuing at a high level, and the picture ahead is even brighter. A total of 651 new plants was located in the South the first six months, and conservative estimates place the 1959 total at "well above 1,000."

The Dixie expansion in the past few years has been little short of phenomenal. Some 1,059 plants were reported in 1956, 1,314 in 1957 and 1,424 in 1958. Of course some parts of the region are developing more rapidly than others. But overall, the South is caught in a booming cycle of industrial growth that is sure to result in still greater progress in the years ahead. Meantime, the Southern dollar has begun to speak.

The South has long been regarded as the Nation's greatest reservoir of potential industrial workers. A high birth rate, plus farm mechanization, assures a steady flow of new workers for the new industrial plants.

Public Works A tremendous amount of works is getting underway as a result of the $1,176,580,000 public works bill passed by Congress. The bill, as passed by Congress, allocated $868,204,000 for the civil works program under the supervision of the Army Engineers, $250,368,000 by the Bureau of Reclamation and $15,000,000 for the Tennessee Valley Authority.

Far-reaching Report is Due in 1961 The Eisenhower Administration is strongly hopeful that Congress will not take away more excise taxes, now earmarked for the Treasury Department, to the Highway Trust Fund in 1961. Under present law a portion of the motor vehicle and parts accessories' tax is scheduled to be transferred to the Highway Trust Fund effective July 1, 1961.

Switch of part of the tax would replace the one cent a gallon Federal increase in the motor fuel tax which became effective October 1. Budget Bureau Director Stans, pointing out that the transfer is not scheduled to become operative until mid-1961, is hopeful of a windfall.

Before that date, the Bureau of Roads is scheduled to make a far-reaching report to Congress on highway costs and the fair distribution of highway tax burdens. The Budget Director expressed the hope that when Congress gets this all important report, there will be time to reconsider the placing of more excise tax revenues in the Highway Trust Fund.

Sales tax Talk grows

The last great untapped tax source in the United States is a national sales tax. Most of the states and many of the cities have a sales tax. Even Virginia, which long has had a pay-as-you-go government, is planning on a statewide sales tax.

There is not a chance that Congress will pass a national sales tax in 1960, a presidential election year, when a president of our country, all of the House members and one third of the Senate will be elected. Nevertheless, talk of a national sales tax is growing. However, it might not come unless a great national emergency should arise.

Secretary of Commerce Frederick H. Mueller is on record as declaring that as long as government needs are high, he intends to make a determined effort for equalization of the present hodge-podge of excise taxes. What this amounts to is a broad national sales tax applying to all manufactured products except food. If collected at the manufacturing level it might be dubbed a manufacturers tax.

New Jobs Increase

The United States Chamber of Commerce has calculated that 200 new industrial jobs in any community mean: 393 homes, 320 automobiles, 32 new retail stores, 24 professional men, 18 new school teachers and 22 more classrooms, plus $1,000,000 in bank deposits and $1,500,000 in life insurance.

Cranes Exempt

The Internal Revenue Service has ruled that mast and boom type cranes built to be mounted on trucks are not subject to Federal automotive excise taxes. The cranes are usually fastened to the truck chassis, but the primary use is in the operation at a job site. The IRS says a crane so mounted is neither a part nor an accessory for the vehicle.

Higher Bridge Clearance

The American Association of State Highway Officials is now on record recommending an increase in the minimum vertical clearance for bridges on the Interstate Road System from 14 to 17 ft. Secretary of Commerce Frederick H. Mueller will make the final decision.

Highway officials estimate that the higher minimum bridge clearance standard for structures under construction or to be constructed will increase the Interstate program cost by $300,000,000. The Department of Defense requested the change.

Officials estimate that approximately 8,000 Interstate bridges have thus far been built or under construction under the 14-ft. minimum standard, and some of these will have to be modified to meet defense needs.

Business Expansion

There is a feeling in Washington that the long steel strike which gripped the country may result in a stretch out of the business expansion across the Nation. Many businesses that had planned to expand or step-up their operations in the last quarter of 1959 had to move their plans up into the first part of 1960 because of the disruption of the long and expensive strike.

Traffic Choking Cities

There is a growing demand for Congress to undertake, through hearings, a study of decaying central cities across the land because motor vehicle traffic assertedly is choking them to death. Central city property values are dropping each year in nearly all large cities including Washington with its colossal government payroll.

Meantime, some engineering authorities that have been making studies of congested areas agree that unless the people act and install a rapid integrated transit system, "downtown" is going to die.

With the average private commuter automobile carrying only 1.8 passengers, a spokesman for the Greater Boston Chamber of Commerce tossed out this warning: "If commuters continue to move farther from the city and we accommodate them with wider highways, and if we continue to build downtown garages, eventually we will destroy the downtown area, the commuters' places of employment and the commuter himself."

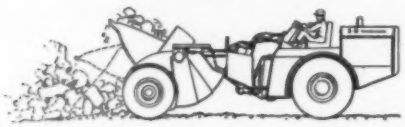
Unions Suspicious

Passage of the Landrum-Griffin bill, plus the refusal of the steel and copper industries to yield to quick settlement with big increases, caused union leaders to think that there is a conspiracy against unions.

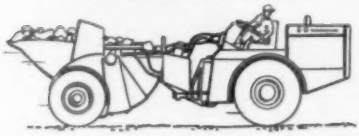
As a result, union leadership is attempting to rally all-out support among many of their apathetic members who are opposed to long work stoppages causing hardships to their families.

Now a SELF-LOADING TRUCK! The proved S-D TRANSLOADER

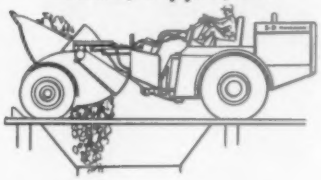
1. LOADS itself!



2. TRANSPORTS load!



3. DUMPS load into crusher, hopper, etc.



- Eliminates Shovels, Loaders and Trucks!
- One man (Transloader operator) does the job!
- No synchronization of several pieces of equipment!

THIS HIGH-SPEED Self-Loading S-D Transloader promises you tremendous savings! Now you can eliminate (1) costly investments in shovels, loaders and trucks! (2) Eliminate multiple manpower in shovel, loader and truck operators! (3) Eliminate standing idle time of shovel or loader equipment, and (4) standing idle time of the operator when he doesn't have a truck to load! (5) Eliminate standing idle time of trucks and (6) their drivers while trucks are being loaded! (7) Eliminate the maintenance and costly upkeep of all this machinery and equipment! The one-man operated SELF-LOADING S-D TRANSLOADER shuttles back-and-forth between loading point and dumping station! Your S-D Transloader will keep working full time—loading, transporting and dumping in continuous, uninterrupted performance cycles! All facts and information, including illustrated literature, specifications, time studies, maintenance data, etc., are all packaged and ready for mailing to you on request, plus name of dealer nearest you. Write or call us today! *Sanford-Day Iron Works, Inc., 612 Dale Avenue, Knoxville, Tenn. Telephone: 3-4191.*

SANFORD-DAY

KNOXVILLE, TENNESSEE

TO: Sanford-Day, 612 Dale Avenue, Knoxville, Tenn.

Gentlemen, please forward by return mail Complete Information Packet on the S-D Transloader:

NAME _____

FIRM _____

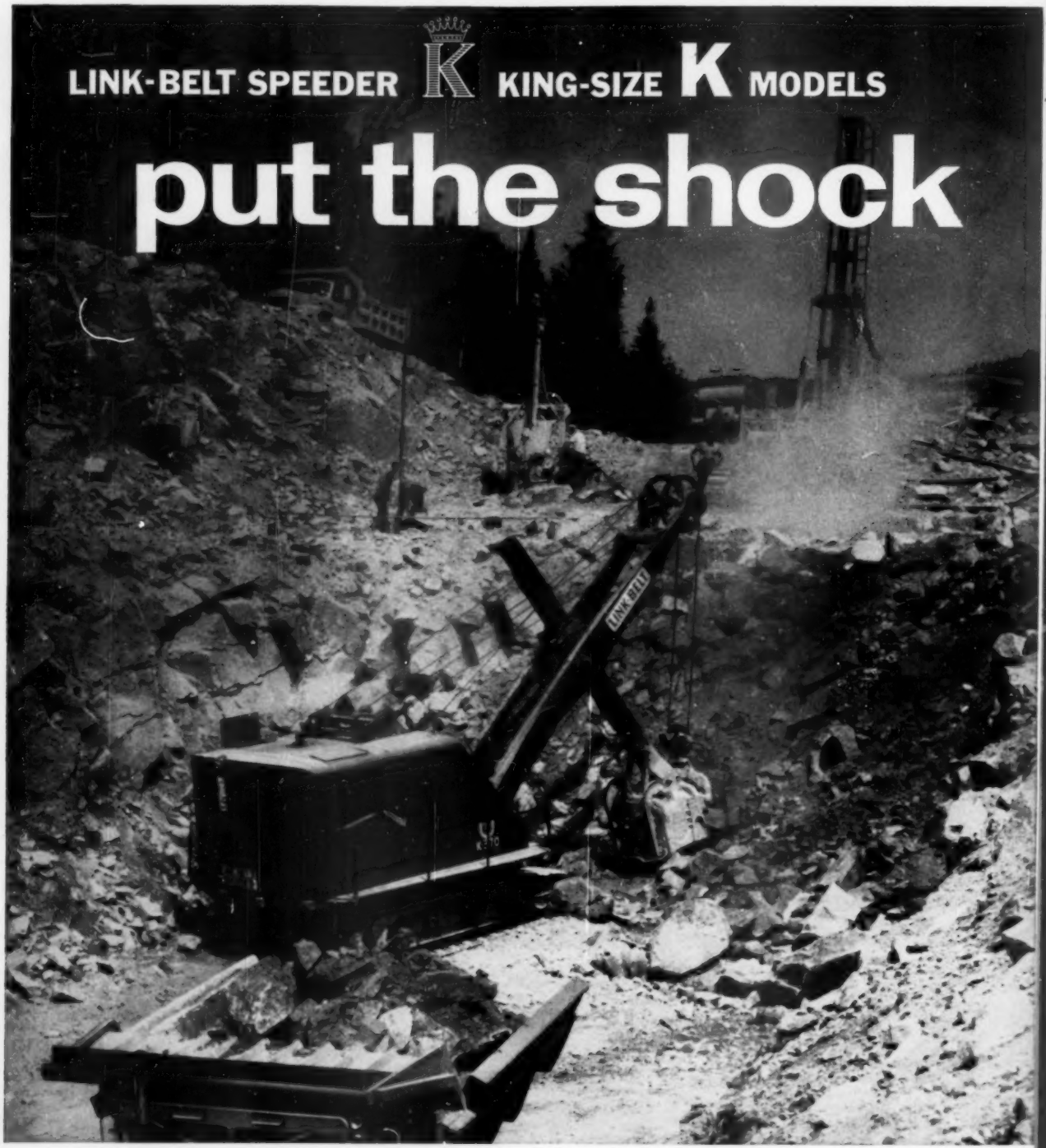
ADDRESS _____

CITY _____ STATE _____

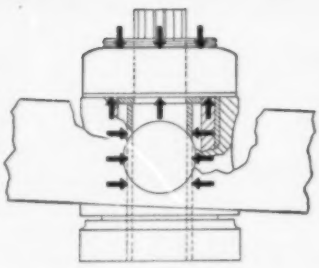
Enter 1462 on Reader Card

LINK-BELT SPEEDER K KING-SIZE K MODELS

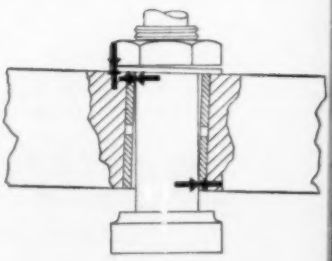
put the shock



THIS—Link-Belt Speeder rotating base is trunnioned to the centerpin. Despite tilting action of the upper, there's perfect alignment of the centerpin and the bushing, plus full-length distribution of loadings to minimize stress and wear on centerpin.



NOT THIS—Without exclusive centerpin trunnion, tilting action of the base causes concentrated bending forces on the centerpin and prying action on the centerpin nut. Result is gouged centerpin bushing when swinging . . . repeated repairs.



in the rock...

come back for more!

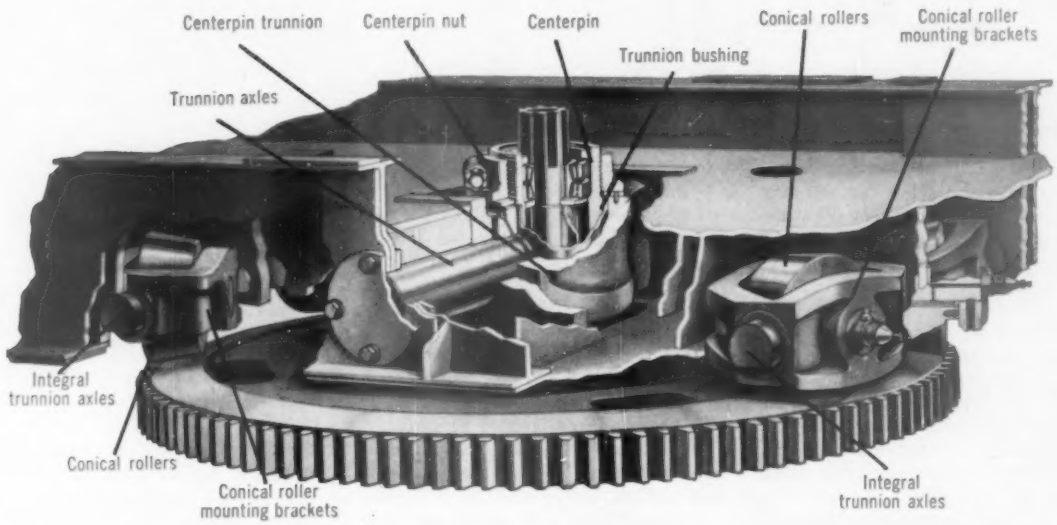
TOUGH CUTS OR BRUTE LIFTS, BURLY 1½ TO 3-YD. K-MODELS OUT-MANEUVER SMALLER RIGS . . . OUT-PRODUCE LARGER MACHINES!

Always on top of the heavyweight jobs! Your operator in the cab of a Link-Belt Speeder King-size K-model *knows* he need *never* baby this machine!

He feels the smooth surge of greater *usable* hp through hefty, extra-size shafts, gears and clutches. He socks the dipper in—rugged K-model structural members soak up the shock.

And K-models deliver these output-boosting advantages: Speed-o-Matic, the *true* power hydraulic controls . . . fast, effortless power hydraulic steer . . . *plus* bonus usable hp.

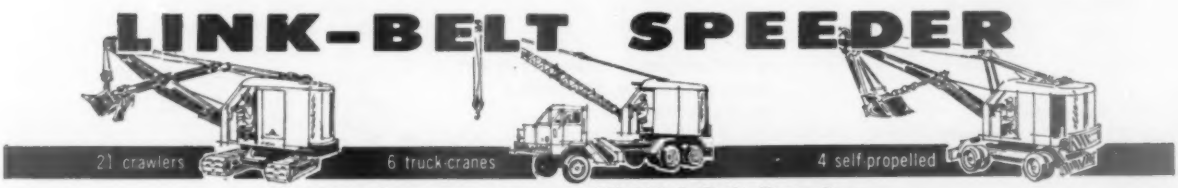
If you'd like more facts demonstrating how King-size K-models (1½ to 3-yd. capacity) outstrip the field, see your distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.



Exclusive centerpin trunnion and oscillating roller design evenly distributes all loadings

The centerpin trunnion is mounted on two stub axles within the upper frame, permitting the upper to oscillate without any of the binding stresses common to other centerpin arrangements. All loadings are thus equalized with no prying action against the centerpin nut or bending stresses against centerpin and its bushing. Working hand in hand with centerpin design principle are the oscillating conical rollers. They are mounted within brackets that oscillate on stub axles, permitting full face contact of rollers with roller path at all times . . . no peening of roller edges or gouging of roller path.

15,231



It's time to compare . . . with Link-Belt Speeder

Enter 1410 on Reader Card

LABOR RELATIONS

A ROUNDUP OF ACTUAL DAY-TO-DAY IN-PLANT PROBLEMS AND HOW THEY WERE HANDLED BY MANAGEMENT MEN

Can employes be disciplined for smoking if there aren't any signs?

What Happened: The company had a written rule which read "No smoking is permitted in or around the plant except in specifically designated places."

Price and Cothran, two employes with several years seniority, were caught smoking on the roof. They were given a disciplinary layoff. They protested that the company was unjust because there were no "no smoking" signs in that area. At arbitration the company came up with both barrels:

1. We have a written rule and every employe is given a copy when hired.
2. These two men knew that rule because they have worked here for several years and heard foremen warn men against smoking anywhere except the rest rooms.
3. We have had several fires and we aren't taking any more chances.
4. We don't have to post rules to have them obeyed. We did it orally and that's enough. If we posted "no smoking" rules, we'd have to plaster the whole plant with signs.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Jaffee ruled: "The company has not only the right but the duty to take certain safety precautions —not only to protect employes but also to protect property. While the rule concerning smoking was not posted, the contents thereof were made known to all employes at the time of hiring and thereafter. Employes generally, and the grievants in particular, had full knowledge of the rule concerning smoking: that smoking was not permitted 'in and around the plant except in specifically designated places.'

"The term 'specifically designated places' did not require the posting of signs. These places could be designated orally and they were so designated to all employes—not once but many times. There was no necessity in the present case for a sign to be placed on the roof that smoking was prohibited in that area. Under all the circumstances of this case it is clear that there was just cause for these two employes to be disciplined."

Is the company responsible if a locker-room fire destroys a worker's clothes?

What Happened: Jack Jensen, walking through the locker room, smelled smoke. He called the safety inspector and both discovered that there was a fire in Bill Patoka's locker. The safety man picked up a fire extinguisher and poured liquids through the locker's ventilating slats. Then the lock was broken off and the rest of the blaze was put out. When Patoka arrived he was crestfallen. His new pants, shoes and other personal belongings were scorched and drenched.

"Pay me for my loss," he demanded of the company.

"Personal belongings are not our responsibility. We didn't start the fire. We provide good steel lockers. What if something gets stolen? Do we have to make good for that, too?"

Was the company:
Right? ☐ Wrong? ☐

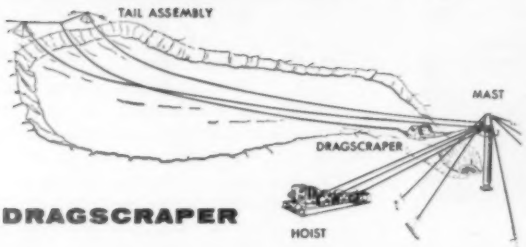
What Arbitrator Valtin ruled: "On the evidence before him the Arbitrator cannot hold that the destruction of Patoka's clothing was in any way the result of the company's failure to discharge its obligations. Even if it were to be assumed that the company's obligation goes not only to the providing of locker space but equally to the protection of the articles an employe may store in the locker—there is not the slightest indication that the present accident was caused by negligence on the part of the company.

It is clear that the fire was efficiently and quickly extinguished upon its discovery. In this respect, too, the company did not fall down on its reasonable obligations. Bill Patoka's claim for the reimbursement of the fire loss is denied." **END**

Cut Materials Handling Costs in Half . . . Dig *and Haul* with a Sauerman Machine

Operating costs as low as 6¢ per ton are reported by Sauerman DragScraper and Slackline Cableway owners. This cost includes labor, power and maintenance when digging free-caving material on average haul distances.

When you use a Sauerman DragScraper or Slackline Cableway, one machine does *both* digging and hauling from deposit to plant. No double handling is required. You cut labor and equipment costs in half—or even more—because a single Sauerman Machine, controlled by one man, replaces the multiple equipment needed for other methods.

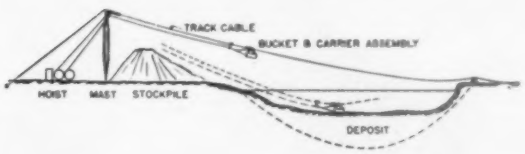


DRAGSCRAPER

DragScrapers are usually recommended for bank or pit deposits. They dig from hillsides or underwater as easily as on level ground and can haul directly to hopper or field conveyor. The Sauerman DragScraper hoist is designed for continuous duty and many years of service. The operator's control station may be remotely located for maximum visibility of deposit and plant.

DragScrapers are built in sizes from 1/3 to 15 yds. to satisfy practically all tonnage requirements.

SLACKLINE CABLEWAY



When deep digging is required or anticipated in the future, a Sauerman Slackline is usually best for the job. This powerful excavator can dig 100 ft. below water, lift its load and deliver the material to a stockpile on a 1000-ft. span.

The Slackliner Bucket inhauls at high speed and dumps automatically. Dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point, completing the fast operating cycle.

The use of a stockpile permits a single 2-yd. Slackline Cableway to handle the material requirements of a 200-tph. plant. Slacklines are built in sizes up to 3½ cu. yds.

★

Find out how you can save with a Sauerman Machine. Write or call, giving tonnage requirements and a description of your deposit. Sauerman engineers will supply their recommendations on the most economical machine for you.

SAUERMAN BROS., INC. 630 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

CRESCENT DRAGSCRAPERS • SLACKLINE AND TAUTLINE CABLEWAYS • DURQLITE BLOCKS

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PEOPLE IN THE NEWS

Vice president named for Permanente Cement

PETER S. HASS has been elected executive vice president of Permanente Cement Co. Mr. Hass, an honor graduate of Stanford University, joined the California company in 1947 as senior engineer in the San Jose plant. He subsequently held positions of administrative assistant to the works manager and to the vice president and general manager.

Dravo announces promotions of top executives

ELECTION of Carl B. Jansen as chairman of the board and chief executive officer, and William E. Clark as president and chief operating officer of Dravo Corp., has been announced. Mr. Jansen, who has been president since 1946, succeeds William K. Fitch who retires this month after 46 years of service with the company. Mr. Clark has been executive vice president since 1955.

A graduate of Union College, Schenectady, N.Y., Mr. Jansen began his business career with Dravo as a field engineer in 1922. He is active in civic and industrial organizations.

Mr. Clark, who was graduated from Ohio State University, joined Dravo in 1930. He served as general manager of both Keystone Div. and Engineering Works Div. of Dravo, became a director in 1946 and was elected vice president in 1948.

Johns-Manville names key personnel

C. B. BURNETT has been elected president and chief operating officer of Johns-Manville Corp., effective January 1, 1960. A. R. Fisher will relinquish the office of president, which he has held since 1951. He will continue as chairman and chief executive officer.

Mr. Burnett, a business administration graduate of Washington University, St. Louis, Mo., and former law student at Kent College, Chicago, joined the company in 1931. He will continue as director.

R. S. Hammond, a company veteran of 33 years, has been elected a vice president and appointed general manager of the building products division. He succeeds W. R. Wilkinson, who is retiring after 34 years with J-M.

George H. Martens, Jr., has been appointed manager of the industrial building products sales department of the building products division, succeeding Mr. Hammond.

Myles E. Sweeney will fill the newly created post of general product manager of the industrial building products sales department.

Stepanek elected to CIA

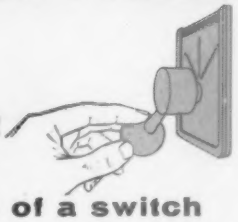
HAROLD F. STEPANEK, secretary-treasurer, Alpha Portland Cement Co., Easton, Pa., has been elected to membership in the Controllers Institute of America.

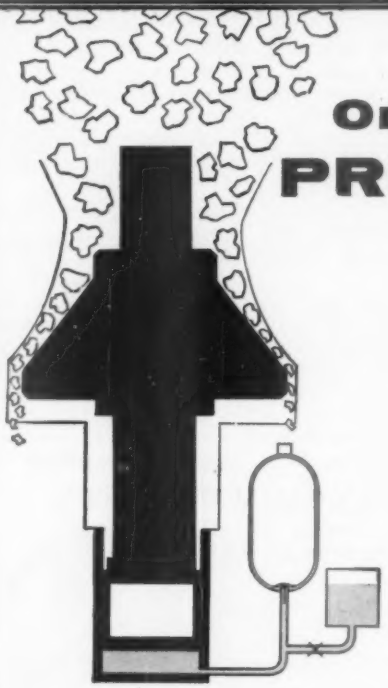
(Continued on page 30)

The only crusher that provides

One-Man, One-Minute PRODUCT CONTROL

GET
ANY
CRUSHER
SETTING
at the flip of a switch





It's Hydraulic

Cone is supported on a hydraulic jack. Crusher setting is controlled by the amount of oil in the jack. A flip of a control switch, conveniently located, positions the cone at any setting.

Adjustment to product size . . . compensation for wear . . . emergency unloading — all are one-man, one-minute operations — all are accomplished with a flip of a switch in the *Hydrocone* crusher. Compare this speed and simplicity with the time-consuming inconvenience of any other method of changing crusher setting—in any other gyratory type crusher. You'll discover that the *Hydrocone* crusher can actually add production hours to your day . . . can give you increased tonnage and greater profits by eliminating excessive downtime.

New Bulletin Available

Bulletin 07B7145C tells the complete *Hydrocone* crusher story. Get your copy from your nearby A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis.

Hydrocone is an Allis-Chalmers trademark.

Hydrocone CRUSHER

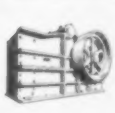
A-C ALLIS-CHALMERS

A-5261

ALLIS-CHALMERS

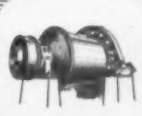
Hammermill

Vibrating Screen



Jaw Crusher

Gyratory Crusher



Grinding Mill

Kiln, Cooler, Dryer

Enter 1412 on Reader Card

(Continued from page 28)

Julian to manage Acme sales

STANLEY W. JULIAN has been appointed sales manager for Acme Materials Co., Inc., of Phoenix, Ariz. Mr.

Julian was formerly executive secretary of the Independent Contractors Association of Arizona. He attended the University of Arizona.

Huron names Smith St. Joseph manager

ROBERT R. SMITH has been appointed superintendent of the new Huron Portland Cement Co. distributing plant in St. Joseph, Mich. Mr. Smith started work with the company in 1953 as a clerk in the Toledo plant and rose to assistant superintendent, Detroit, before this latest promotion.

Clausen elected to Mining Engineers post

CARL F. CLAUSEN, director of the Portland Cement Association's manufacturing process department, has been elected mid-continent vice chairman of the Industrial Minerals division, Society of Mining Engineers. Mr. Clausen has been active in AIME affairs for many years.

Three major posts filled at Permanente

THE OPERATIONS DIVISION of Permanente Cement Co. has announced three appointments.

John I. Walker, formerly assistant to the vice president in charge of operations, has been assigned to the newly-created post of general production manager for Permanente Cement.

Walter E. Ousterman has been named to Mr. Walker's former post. Eldred Bollinger has been promoted to assistant production manager for the company.

All three appointees are headquartered at the Permanente plant near Los Altos, Calif.

Texas Industries elects Sewell

VIRGIL SEWELL was elected a vice president of Texas Industries, Inc. by the company's board of directors. Mr. Sewell was previously North Texas production manager for the company, and has been with Texas Industries since 1953.

Lincoln to direct industrial relations

MATERIAL SERVICE CORP. has announced the appointment of Lucian A. Lincoln to the position of director of industrial relations. An honor graduate of DePaul University with an L.L.B. degree, Mr. Lincoln's legal background includes work in labor relations and commerce.

Name Kentucky Stone board chairman

JOHN M. MACKALL has been elected chairman of the board of the Kentucky Stone Co. Mr. Mackall, who has been a director since 1936, succeeds the late Wiley B. Bryan. W. D. Milne, president since 1959, was elected a director to fill the vacancy left by Mr. Bryan's death.

Duke is new executive vice president for 3M

JOSEPH C. DUKE has been named to the newly created post of executive vice president for sales administration and public relations by Minnesota Mining and Manufacturing Co. He had been executive vice president for the firm's Coated Abrasives, Adhesives and Chemicals divisions. Mr. Duke started with 3M in 1921 as an abrasives salesman, and held a number of important sales positions before becoming vice president and general manager of Coated Abrasives Division in 1948.

Calaveras appoints assistant plant head

EVAN HALL has been named assistant plant manager for Calaveras Cement Co. at its San Andreas, Calif., plant. Mr. Hall, formerly mill superintendent, succeeds the late Tom Love.

Van Velzor named traffic manager

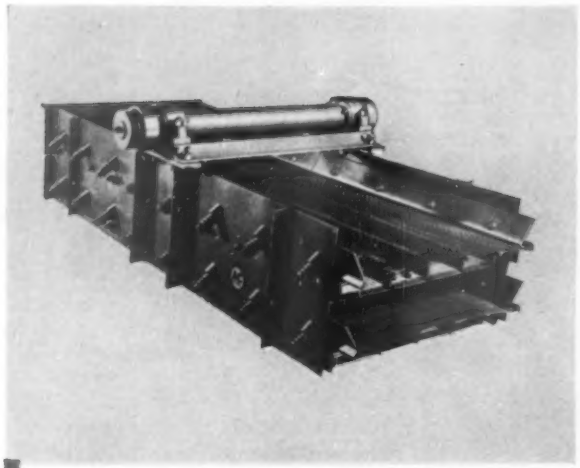
DUNDEE CEMENT CO. has appointed William F. Van Velzor to the post of traffic manager. A graduate of Michigan State University, Mr. Van Velzor formerly served as assistant traffic manager for the George F. Alger Co.

Assistant sales manager

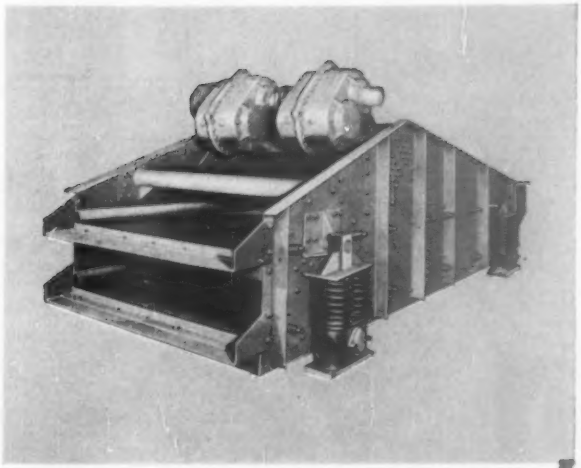
RICHARD R. SCOTT has been promoted from sales representative to assistant sales manager of Pittsburgh Coke and Chemical Co.'s Green Bag Cement Division.

Kansas PCA names Schweers

A. H. SCHWEERS has been appointed housing and products engineer for the Kansas district of Portland Cement Association. Mr. Schweers succeeds Les W. Baxter who recently joined the Oklahoma City district of the PCA.



For moderate to fine sizing — wet or dry. AVS *Aero-Vibe* inclined screen: Available with wire cloth or perforated plate surfaces. Maximum aperture — 1½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 5 by 10 feet.



For coarse to fine sizing — wet or dry, rinsing, or media recovery. *Low-Head* horizontal screen: Saves headroom. Wire cloth or perforated plate. Apertures to 2½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

FROM ALLIS-CHALMERS COMPLETE LINE

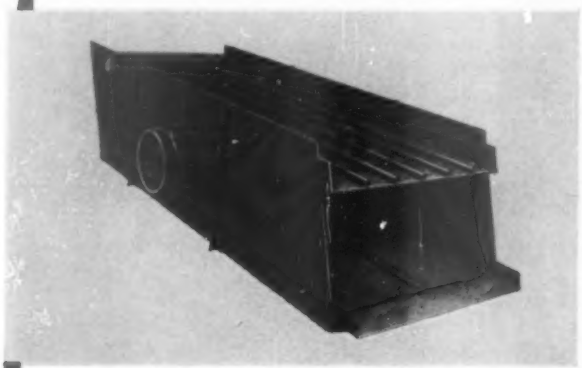
The right screen for your aggregate plant

FOR SCALPING, SIZING, RINSING, WASHING AND HEAVY MEDIA RECOVERY, ALLIS-CHALMERS PROVIDES THE SCREEN YOU NEED

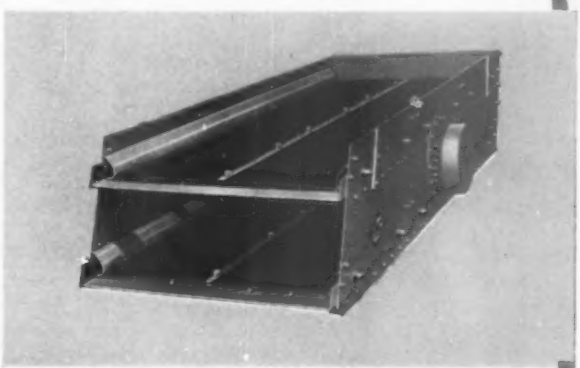
Large or small capacity — wet or dry crushed stone, sand or gravel — whatever your application there's an A-C screen for the job. Building the industry's most complete line of horizontal and inclined screens, Allis-Chalmers gives unbiased recommendations — suggesting to you the screen that will do your job at the lowest possible cost consistent with quality construction.

Built for a beating: There's no skimping on quality at A-C. For example, the frames of Allis-Chalmers screens are carefully machined and *stress relieved* for years of tough usage. Extra-large bearings give added life.

Easy to choose: A helpful screen selection guide has been prepared to help you pick the right model screen for your process. *Contact your Allis-Chalmers representative or write for Bulletin 25B6280. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.*



For scalping and coarse sizing — wet or dry. XH *Ripl-Flo* inclined screen: Wire cloth, perforated plate, rod or stepped grizzly-bar surfaces. Apertures to 10 inches. 1, 2 or 3 decks. Sizes 4 by 8 to 8 by 14 feet.



For light scalping, coarse to fine sizing — wet or dry, and for rinsing. SH *Ripl-Flo* inclined screen: Wire cloth or perforated plate. Apertures to 5 inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

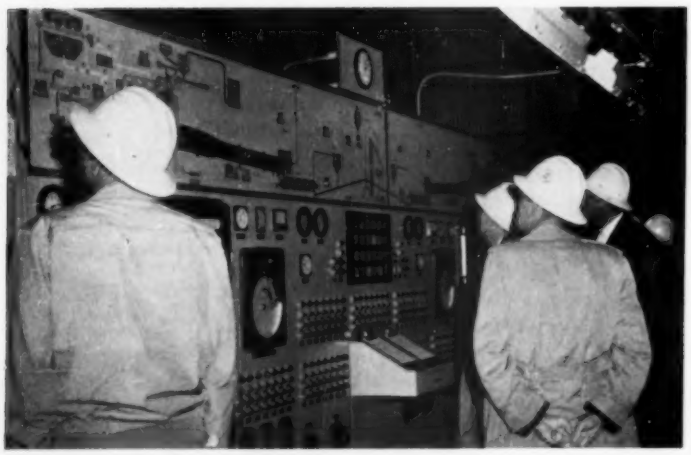
Aero-Vibe, Low-Head and Ripl-Flo are Allis-Chalmers trademarks.

ALLIS-CHALMERS A-1200-CM

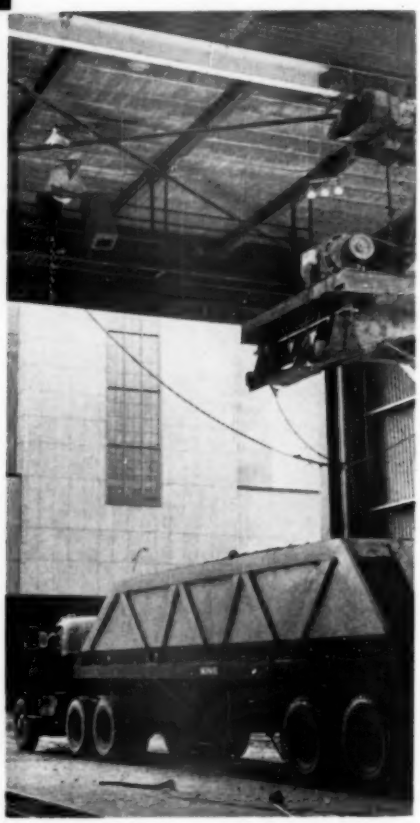
Enter 1413 on Reader Card

INDUSTRY NEWS

THE NEW LOOK IN CEMENT PLANTS was what visitors saw at ceremonies dedicating Ideal Cement Co.'s Ada, Okla., plant. Highly instrumented and mechanized, it has a 5½-mile-long overland belt conveyor to transport raw materials from quarry to plant. The trip, at a speed of 5 mph. and rate of 1,000 tph., takes 58 minutes. The $20-million, two-kiln plant features centralized control. One man can control all production processes, from quarry to final storage



GUESTS TOURING THE PHOENIX CEMENT CO. PLANT at Clarkdale, Ariz., examine the kiln control panel. On the diagram of the burning department (top), green lights show when things are normal, red when there is trouble. The tour was part of opening-day proceedings at the $16-million, 1.8-million-bbl. plant that will supply the needs of Glen Canyon Dam and of a fast-growing community. Phoenix is a division of American Cement Corp.



THIS CAMERAMAN WEARS A HARD HAT. An employe at the Clarkston, Ont., plant of St. Lawrence Cement Co., he keeps an eye on the bin-loading operation. Monitors from three cameras in the industrial TV system permit an operator to prevent damage to equipment by simultaneous checking of load levels in bins and on a belt conveyor

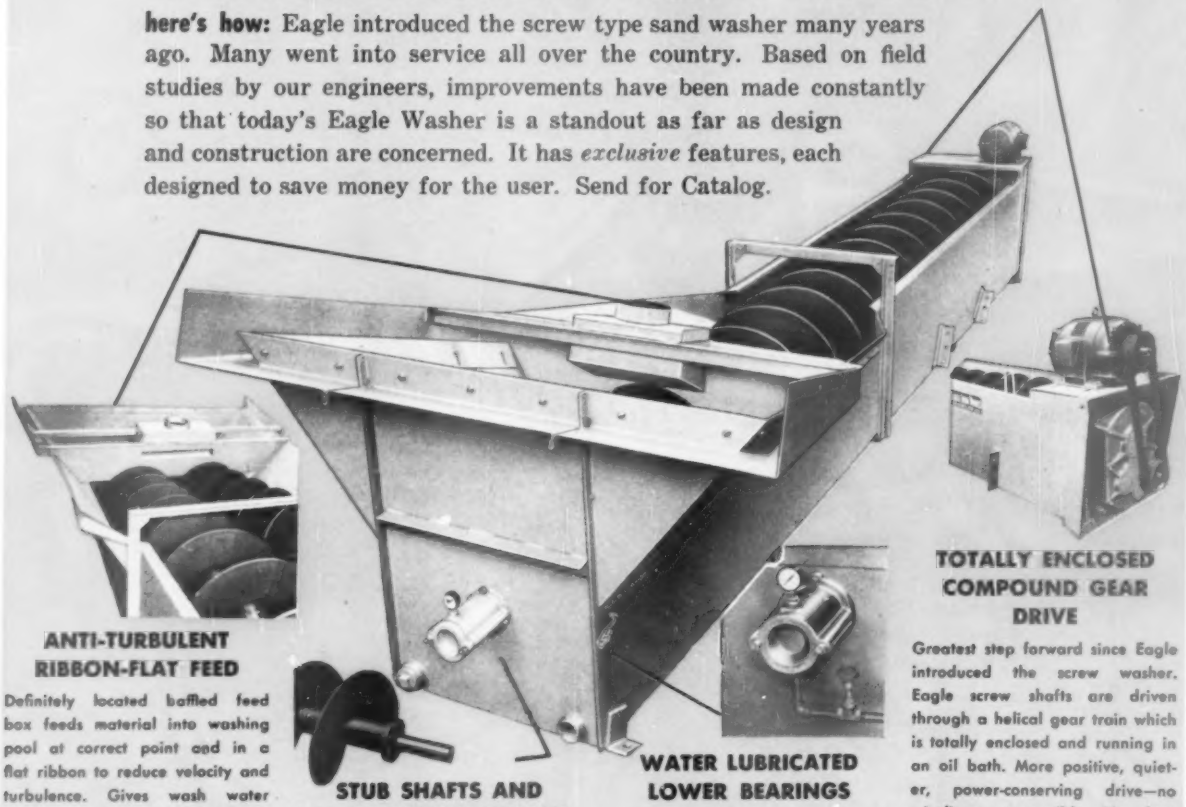
(Continued on page 36)

WAY-AHEAD DESIGN

of **Eagle** Washer-Classifier-Dehydrators

SAVES MONEY FOR YOU!

here's how: Eagle introduced the screw type sand washer many years ago. Many went into service all over the country. Based on field studies by our engineers, improvements have been made constantly so that today's Eagle Washer is a standout as far as design and construction are concerned. It has *exclusive* features, each designed to save money for the user. Send for Catalog.



ANTI-TURBULENT RIBBON-FLAT FEED

Definitely located baffled feed box feeds material into washing pool at correct point and in a flat ribbon to reduce velocity and turbulence. Gives wash water currents rising from bottom of tub a chance to separate lighter specific gravity material before screws start material up the drainboard to the discharge. Flared sides bolted—for easy low cost transportation.

Single Screws in 12 Sizes
Double Screws in 4 Sizes
Capacities 30 to 500 TPH.

STUB SHAFTS AND SOLID RIBBON SCREWS

Screw flight shafts on Eagle Washers are supported by Stub Shafts at lower end. Screw flight shaft and stub shaft are bolted together using flanges. Affords ease of replacement and positive alignment. Solid screw flights have replaceable Ni-Hard shoes. Adequate power and the design strength of solid ribbon screws eliminate need for screw lifting device—permit proper placement of feed box.

WATER LUBRICATED LOWER BEARINGS

Years ago Eagle abandoned grease or oil lubricated lower bearings because gritty water seeps its way into bearings causing undue maintenance. Marine type bearings lubricated by water under pressure are used in Eagle Washers and have greatly reduced bearing maintenance costs. Users praise this money-saving feature.

TOTALLY ENCLOSED COMPOUND GEAR DRIVE

Greatest step forward since Eagle introduced the screw washer. Eagle screw shafts are driven through a helical gear train which is totally enclosed and running in an oil bath. More positive, quieter, power-conserving drive—no misalignment possible. No dust, dirt, or slurry can contaminate the gears to cause undue wear as with open bevel and spur gears. Saves money, too, by greatly reducing maintenance. It's easy to change screw speeds using this drive to attain maximum efficiency.

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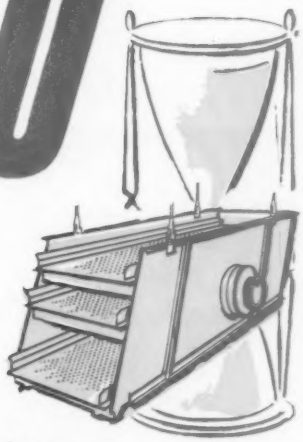

Time is the one intangible factor that can make any operation a success or a failure. Lost or excessive man and equipment hours can easily turn a potentially profitable job into a loss or one with marginal profit. And competition will be keener in the 60's . . . so it stands to reason the operator backed up with production efficiency will count BIG PROFITS going into '61 . . . the operator with time-wasting equipment on the job will lose. Make sure you're "set for '60" with SECO "TIME-CONSCIOUS" VIBRATING SCREENS on your job to assure day-in and day-out dependable performance all year long. What's more you'll be assured of the consistently *accurate* sizing that today's buyers demand. Remember . . . with SECO SCREENS, the stamina is built right in before the nameplate goes on. Put time on *your* side for the 60's . . . with SECO "TIME-CONSCIOUS" VIBRATING SCREENS.

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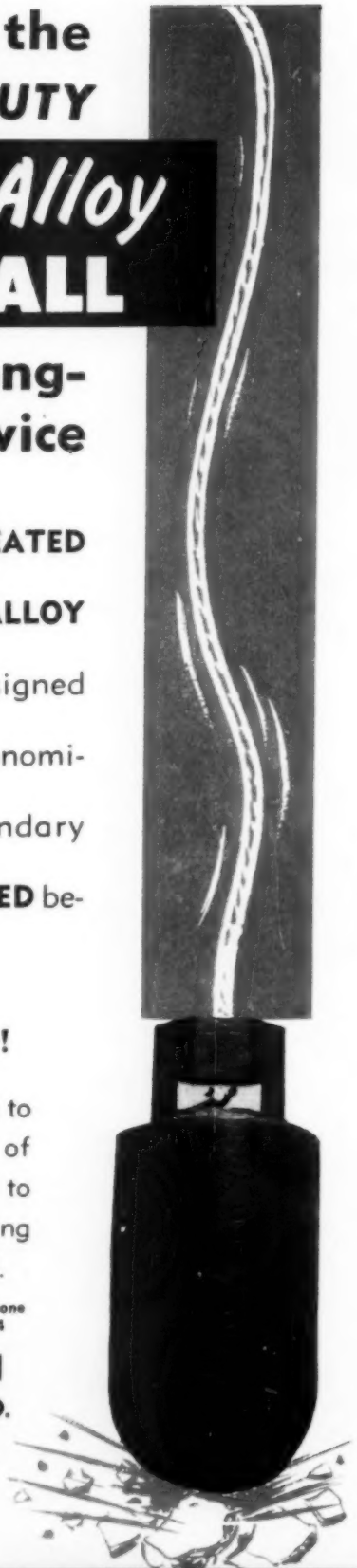

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(Continued from page 32)

Cement prices go up in scattered areas

MARQUETTE CEMENT MANUFACTURING Co., Chicago, and American Cement Corp., Los Angeles, were the first cement producers to announce price changes for 1960. One producer, California Portland Cement Co., Los Angeles, told customers last October that there would be no changes in prices this year.

American Cement Corp. raised prices 15 cents a bbl. at its Detroit-Port-Huron plant.

Marquette raised prices of portland cement from 3 to 4½ percent at four of its 12 plants: Oglesby (Ill.), Rockmart (Ga.), Nashville, and Cowan (Tenn.). This amounts to about 10 to 15 cents per barrel. Prices would remain the same at Milwaukee, Cape Girardeau (Mo.), Memphis, Brandon (Miss.) and Vicksburg (Miss.). No changes were announced for the three other distributing points in the Marquette organization. At the nine points for which prices were given, an increase of 10 cents a barrel for packing and shipping cement in paper bags went into effect January 1. Previously, the charge for paper-bag shipment had been 40 cents per barrel over that of cement in bulk.

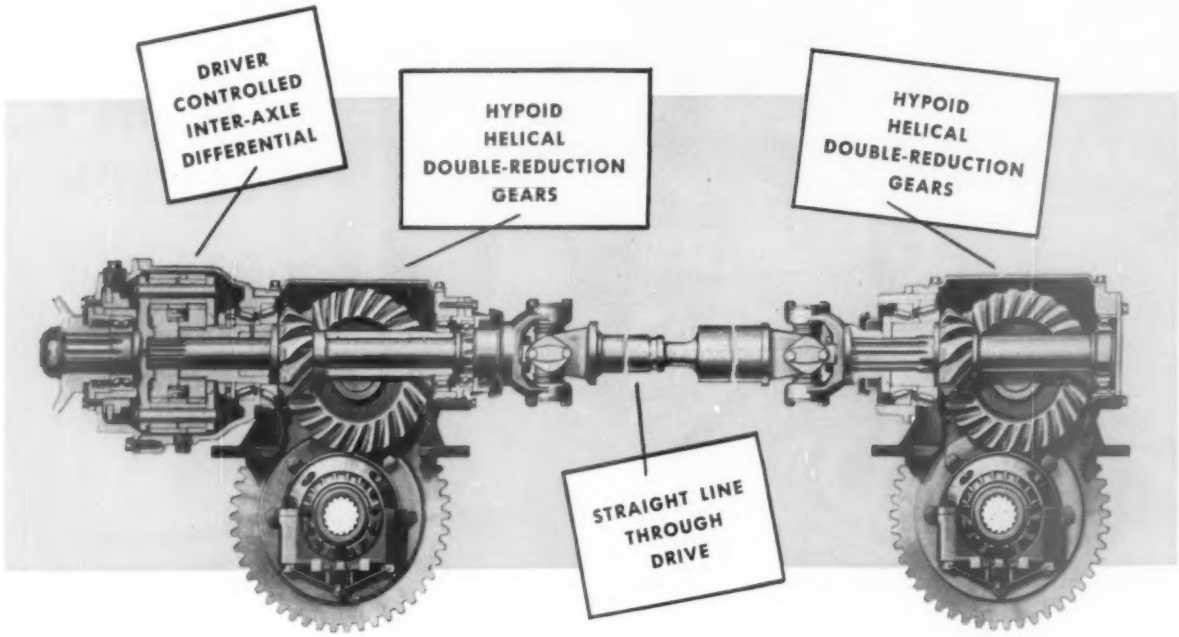
For masonry cement, Marquette announced a price reduction of 3 percent at Memphis, and increases of 3 to 3½ percent at Oglesby, Rockmart and Cowan. No changes from 1959 prices are being made at five points.

Competition from imported cement and an expected slight downturn in demand made producers wary of increasing prices, despite sharply increased costs. The Wall St. Journal quoted Dwight A. Symmes, president of Glens Falls (N.Y.) Portland Cement Co., "The foreign cement is twice as evident this year (1959) as last."

Southern Pacific Milling Co. celebrates new plant opening

COMPLETION OF ITS ULTRAMODERN El Rio, Calif., plant was celebrated with an open house by Southern Pacific Milling Co. Sand and gravel, ready-mix and hot-mix facilities were viewed during the event by 450 persons. Features are the heavy-media-separation process of removing deleterious materials from gravel, and electronic control panels to provide a large measure of automation in operations.

(Continued on page 39)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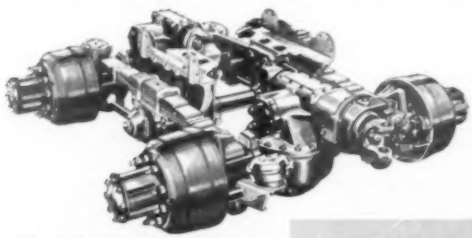
Timken-Detroit Heavy-Duty Tandems with Hypoid Helical Double-Reduction Gears give you payload leadership, long trouble-free service, economical performance. Here's why –

True Double-Reduction. Two full sized gear sets form a balanced power train with each gear set accomplishing a healthy reduction. Husky hypoid first reduction gears and wide faced helical second reduction gears combine to form a rugged double-reduction drive that will outperform all others.

Widest Choice of Axle Ratios. Timken-Detroit "balanced design" full double-reduction does not limit the secondary gear set to a fixed low numerical value which depends on primary gear set for all ratio changes. The hypoid-helical gear arrangement permits a wider range of ratios because the numerical value of both the primary and secondary ratio gear sets can be varied.



Top-Mounted Straight Line Drive. Eliminates all prop shaft angularity. Bearing and gear life is increased. Maintenance costs reduced. Top-mounted position of carriers provides main drive shaft alignment – ideally suited for short wheel base trucks or tractors.

Driver Controlled Inter-Axle Differential. Divides torque equally between axles, yet compensates for any differential of speed between the axles. Both axles are always doing equal amounts of work . . . can be locked out at any speed when poor traction conditions exist.

Tough, Torsion Flow Axle Shafts Are Best By Any Test. Don't be misled . . . patented Torsion Flow Axle Shafts are still the best available to the American Trucking Industry. Comparison tests prove that Timken-Detroit Axle Shafts, spline diameter for spline diameter, are the toughest ever made.

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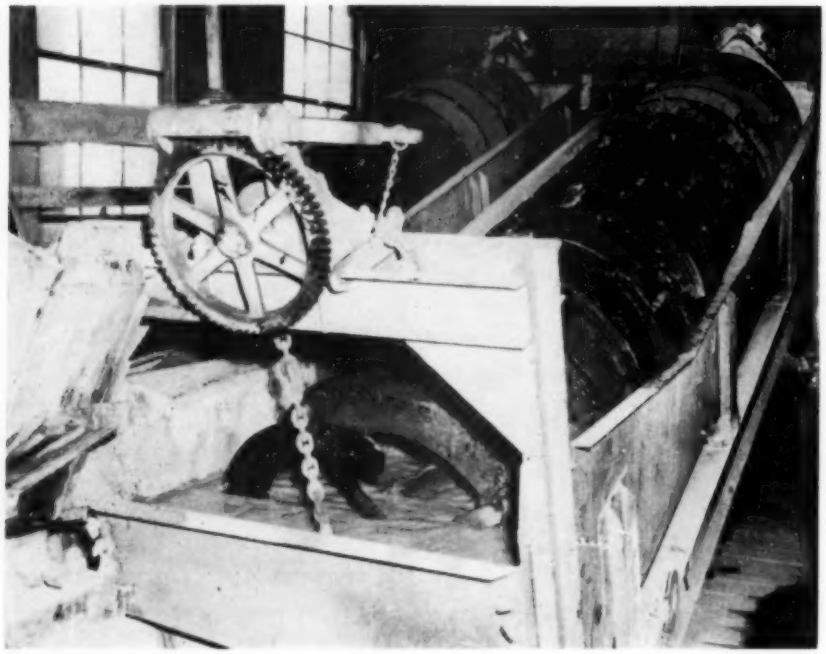

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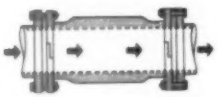

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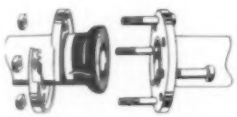

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(Continued from page 36)

Flintkote, American-Marietta pace industry expansion news

TWO ANNOUNCEMENTS of major importance to the rock products industry were by Flintkote Co., New York, and American-Marietta Co., Chicago. The former will construct a $14-million cement plant in Redding, Calif., under the direction of Calaveras Cement Co., a Flintkote division. American-Marietta includes several segments of the rock industry in its $30-million, multiplant expansion program.

The new Flintkote plant will be built on a 1,500-acre site containing high-grade deposits of limestone and shale. Initial rated capacity will be 1.5 million bbl. Construction, said I. J. Harvey, Jr., chairman of the board, is scheduled for completion by March 1961.

American-Marietta's expansion program, largest in its history, will be carried out largely in 1960. More than a third will go to boost its lime, magnesite and dead-burned dolomite production capacity by 180,000 tpy. New kilns will be installed at Manistee, Mich., and Woodville, Ohio.

Cement facilities will figure in A-M's expansion plans, too. Further extension is planned of automation at its Dragon Cement Division, and a number of bulk storage and distributing stations will be built. The first of these will serve the Boston area.

Increased production of basic aggregates will be accomplished through enlargement and modernization at the five quarries of Superior Stone Co. This Raleigh, N.C., firm was acquired by A-M in 1959. Operations also will be expanded in Iowa, Kansas and Missouri at recently acquired facilities of Concrete Materials and Construction Company.

To the list of expansions must be added the new kiln to be erected by Penn-Dixie Cement Corp. at its Clinchfield, Ga., plant. This will raise annual capacity from 1.1 to 2.3 million bbl. There also will be new storage facilities for an additional 150,000 bbl. of cement.

St. Lawrence Cement Co., Villeneuve, Que., looks for a spring opening date at a new distribution plant it is erecting in Ottawa. It has chosen a 10-acre plot on the CNR railroad for the plant. A silo with a 10-rail-car capacity can be unloaded at the rate of two cars per hour.

Hawaiian Cement Corp.'s plant at Oahu will be operating by next summer, officials say. Capacity will be 1 million bbl. at first, but may be stepped up to 3 million whenever necessary. Directors inspecting the plant recently had a preview of plant and quarry. The $12-million operation had received some of the largest pieces of machinery ever brought to the islands, including a 40-ton truck crane and 40-ton hammermill.

Industry technicians go back to school

IT WAS "SCHOOL DAYS" AGAIN for 122 concrete aggregates and concrete technicians (and the writer), when they met November 16-20 at the University of Maryland for a hard-hitting, fast-moving short course. The practical program, sponsored by National Sand and Gravel and National Ready Mixed Concrete associations in cooperation with the U. of M. College of Engineering, is probably the best of its type in the country. This was the 14th annual course given by the sponsors.

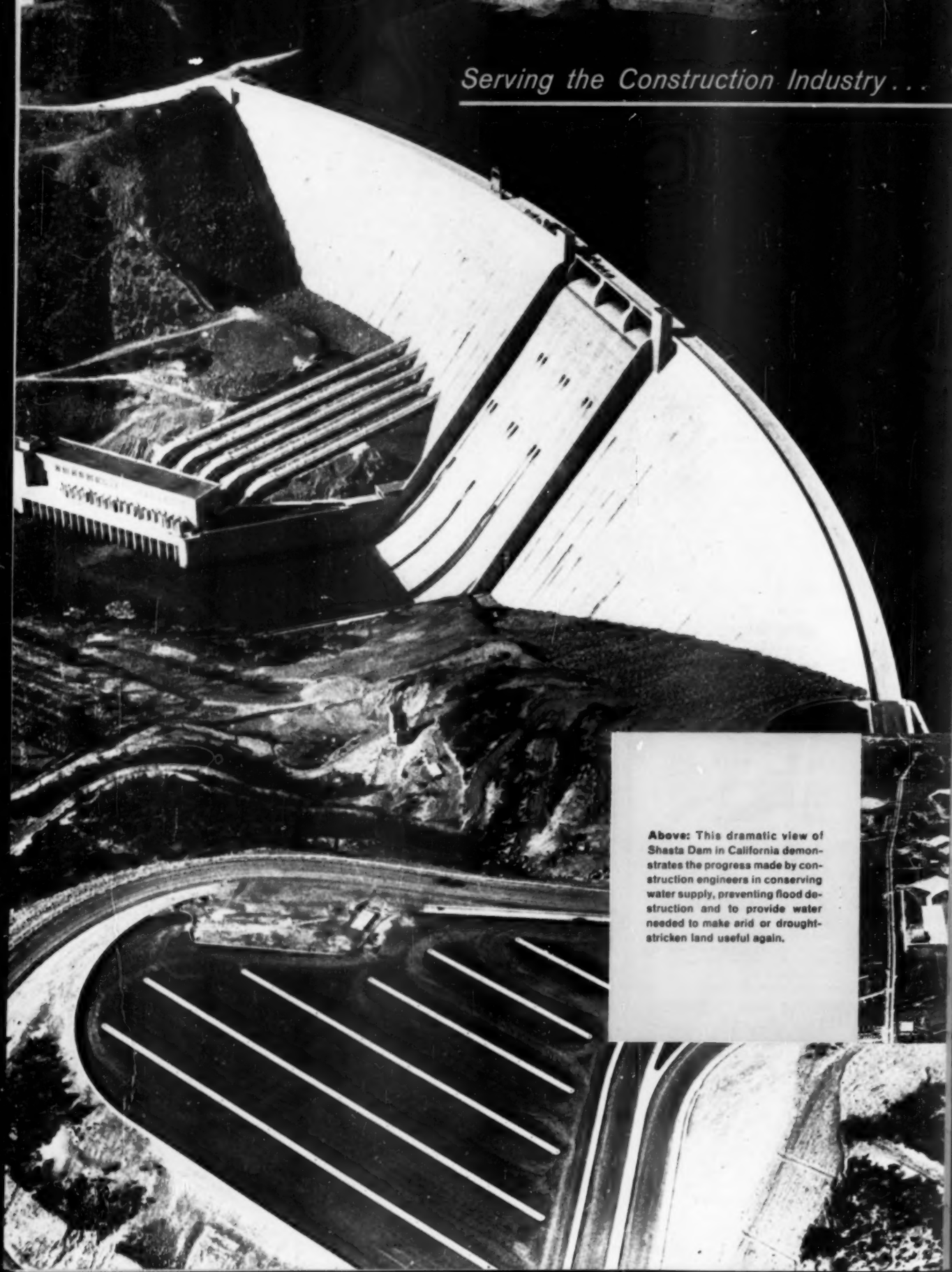
The curriculum was designed to give fundamental and useful information for controlling and improving the industries' products. It covered everything concerning aggregates and concrete from the theoretical to the highly practical phases of concrete mixing.

Students spent the first three days in concentrated classroom work. From 9 a.m. to 5 p.m. they heard lectures by experts on subjects covering properties of aggregates and concrete, tests, quality control, specifications, mix design —the whole works. And there was homework, calculating mixes according to specification.

For the final two days, the group was divided in two sections. One section continued its 9-to-5 stint in a seminar, in which practical problems of product control, plant and equipment were emphasized. A favored few in another section, limited to 20 because of available facilities, moved to the laboratory to physically design, mix and test concrete batches. All tests for aggregates were demonstrated and discussed.

The program was designed by Stanton Walker, director of engineering for the associations, and his assistant, Delmar L. Bloem. Both lectured and gave freely of their knowledge and experience. There also were 16 guest speakers. Association personnel assisting included Richard D. Gaynor, laboratory manager, Herman L. Knoppel, Jr., assistant laboratory manager, and Arthur C. Ellis, John C. Cadwallader and William E. Knoppel, laboratory technicians. All 123 students received a short course certificate from the university.—G.C.L.

(Continued on page 44)



Above: This dramatic view of Shasta Dam in California demonstrates the progress made by construction engineers in conserving water supply, preventing flood destruction and to provide water needed to make arid or drought-stricken land useful again.

SYMONS® CONE CRUSHERS

produce big tonnages of quality construction materials at low cost per ton

Illustrated here are typical examples of the vast contributions to the progress of mankind being made by the construction industry. Technological advancement in civil engineering of huge construction projects such as these call for rigid specification aggregates, crushed sand and cement. To meet the constantly growing demand for vast tonnages of these quality construction materials, Symons Cone Crushers have long been the first choice of leading producers throughout the world.

For in the production of construction materials . . . *as in all of the great ore and industrial mineral operations the world over* . . . there has been no record to equal the performance of Symons Cone Crushers that have so consistently and efficiently produced great quantities of finely crushed product at low cost.

Whether you are a contractor, operator, construction engineer, designer or manufacturer, it will pay you to specify and use Symons Cone Crushers . . . as well as the other Nordberg Machinery for the construction industry . . . *all* designed and built to deliver maximum output at lowest possible cost. *Write for literature.*

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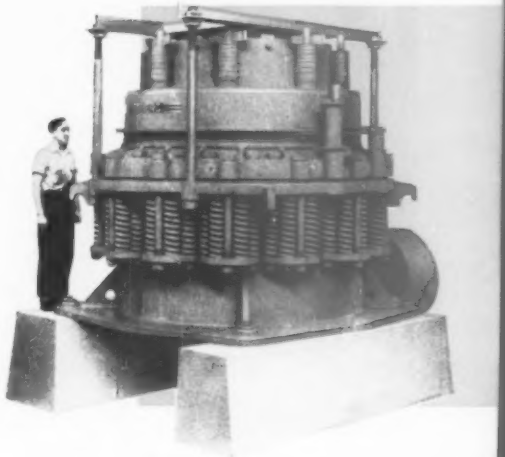

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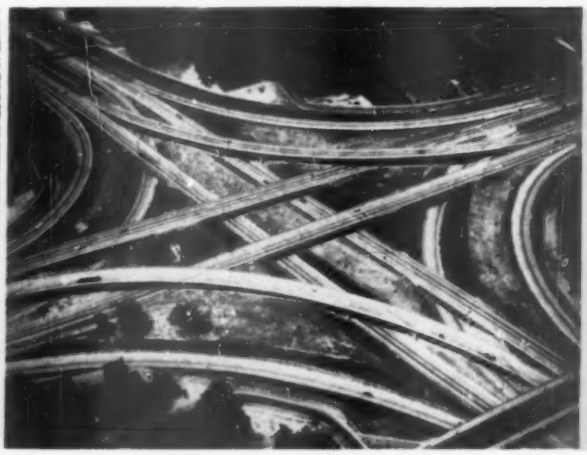

Far left: To meet the challenge of the jet age, engineers and contractors are being called upon to build and expand airport runways to handle the ever-increasing traffic. (View shows Lambert Field, St. Louis).

Left: This view of one of the interchanges on the high speed Detroit expressway is a striking example of the contribution the construction industry is making to the tremendous highway expansion program.

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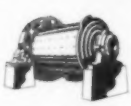
SYMONS PRIMARY GYRATORY CRUSHERS



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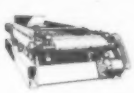

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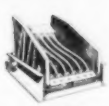

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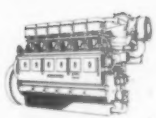
ROTARY KILNS and COOLERS



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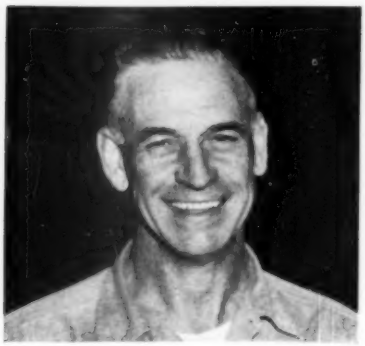
Above: Beyer's President Louis Marino.

Below: General Superintendent Alva Hill.



Deister Screens set endurance records at

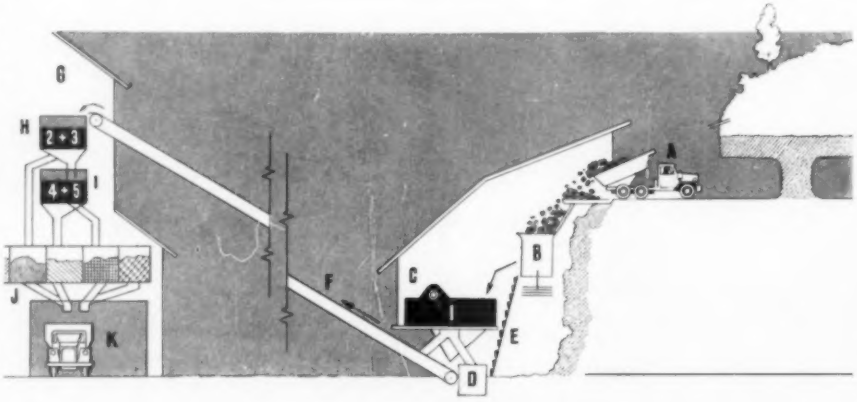
"If I had to order a thousand screens at a time, they would all be Deisters." These are the words of Alva Hill, and Mr. Hill can speak with authority. He's General Superintendent at Beyer Crushed Rock Company of Kansas City Mo., where six Deister Horizontal Screens are doing full-time duty.

Under the able guidance of President Louis Marino, Beyer has built a thriving business from its 640-acre holding. The company produces 2700 to 3000 tons of high grade limestone a day in sizes from 1" down. This is an unusual operation in that all quarrying is done underground. Openings blasted into a 23 ft. seam eventually form caverns half a mile long as the rock is removed.

How Beyer processes rock. Front end loaders haul the mined rock to dump trucks (A) which dump directly into the primary crusher (B) located 200 feet from the quarry. A double-deck 5x16 Type UF Deister Horizontal Scalper (C) handles about 340 tons of crushed rock per hour. Oversize from the two decks is gravity fed through two secondary crushers (D) and recirculated through the scalper by means of two bucket conveyors (E). It is estimated that up to 40% of the stone is recirculated over the scalper.

Material under 1" passing through the scalper's lower deck is transported on a 30" belt conveyor (F) to a screening tower (G) where four 5x16 horizontal Deisters separate the sizes.

The topmost pair of screens (H) have 1", ¾" and ½" openings, and



Schematic plant layout of Beyer Crushed Rock Company. Details are given in text above.

stone from each of their three decks is chuted to storage bins as finished material. Sizes under ½" drop to the other two screens (I), both of which have ⅜", ¼" and ⅛" openings. Finished material from these decks is also chuted directly to the storage bins (J). These ten bins, which cover a 50x100 ft. area, discharge through gravity chutes into a truck loading tunnel (K).

"Over a million tons of stone . . . not one minute's trouble." Concerning the performance of the five new horizontal Deister Screens, Superintendent Hill, who has been responsible for plant design and production since the quarry opened twelve years ago, says: "In two years time, they've handled over a million tons of stone. Outside of minor adjustments at the time of installation, we haven't had one minute's trouble. Screen cloth life has been unbelievable — two ⅛" dust and one ¼" buckshot cloths are all that we've had to replace."

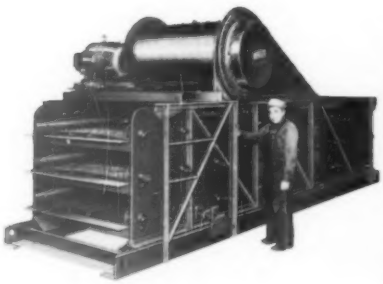
It is worth noting that Deister Screens had been used for eight years at Beyer prior to the installation of these five new horizontal Deisters in 1957. Two three-deck, 4x12 inclined Deisters were purchased in 1949 and another identical pair added a year later.

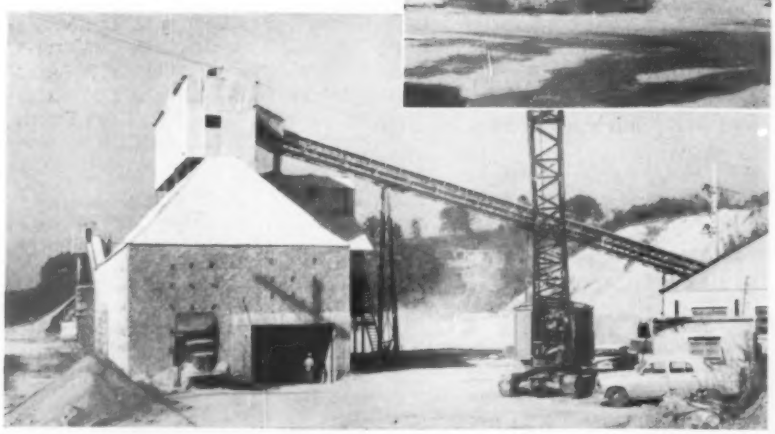
According to Mr. Hill, all 4 units "operated perfectly from the day they were installed. The first pair had no repairs except one spring although they handled at least 5 million tons and the only repair on the other two was one bearing replacement."

With this kind of service experience, it's little wonder that Mr. Hill specified Deister Screens when Beyer Crushed Rock Company converted to horizontal screening. Nor is it hard to understand why the company is "100 per cent sold on Deister."

Eight-ton dump truck hauls rock from the underground quarry to the crusher plant. This is one of nine trucks used for this purpose. They were rebuilt to Beyer's own specifications in their own shops during the slow season.

Beyer Crushed Rock





Far left: In plant modernization programs the Deister Type UF Horizontal Screen is widely used to increase capacity where headroom is at a premium. Write for Bulletin 57 describing the Type UF and other screens in the complete Deister line.

Near left: This conveyor, 460 feet long, carries stone from the scalper to screening tower where four Deister Three-Deck Horizontal Screens do the fine grading job.

Bottom left: Overall view of Beyer's crushing and screening plant which processes 2700 to 3000 tons of limestone daily. Plant's remarkable efficiency is due to Superintendent Hill's efficient design and in large part to the maintenance-free performance of the vibrating screens. All screens at Beyer are Deisters.

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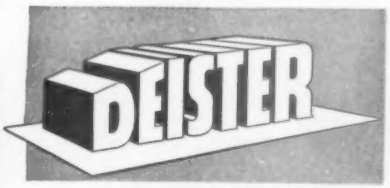

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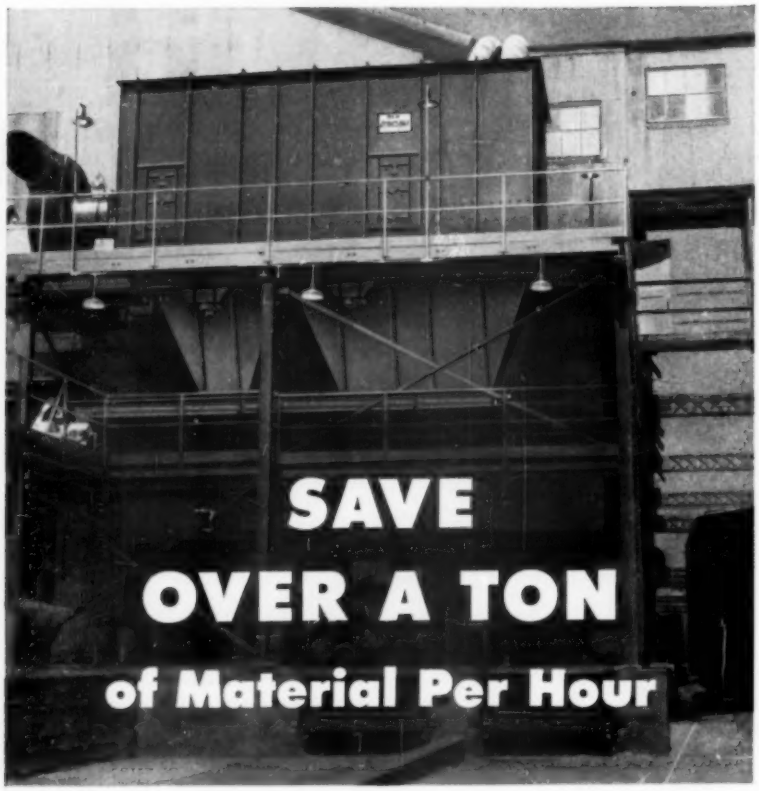
SLY DYNACLONES®
at American Potash



At its Trona, Cal., plant, American Potash & Chemical Corporation uses 4 Sly Dynaclone Dust Filters at the Borax Refinery, Borax Shipping Station, Coarse Granular Potash Plant, and Potash Shipping Area (pictured above). During every hour of operation, the Dynaclones recover an estimated 1260 pounds of borax and 1140 pounds of potash.

In addition to these substantial material savings, the Dynaclones are the key to improved health and safety, better housekeeping, more efficient plant operation. Good performance, long bag life and nominal maintenance requirements are noteworthy Dynaclone features.

Put the "Roll-Clean" Dynaclone to work on your continuous processes. Benefit from these advantages: Constant, uniform suction at dust sources, 24 hours a day if required. Automatic bag cleaning. More cloth per cubic foot of filter. New "Resist-O-Wear" filter bags (patent pending) — as much as 3 times longer life.

Get complete Dynaclone details . . .

Send for Catalog 104

SINCE 1870 SLY

THE W. W. SLY MANUFACTURING CO.

4746 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

OVERSEAS LICENSEE: ANDREW AIR CONDITIONING LTD., LONDON S.W. 1, ENGLAND

Enter 1432 on Reader Card

(Continued from page 39)

Irwindale plant repeats 1958 safety performance

NATIONAL SAND AND GRAVEL ASSOCIATION announced that the winner of Class A competition in its 1959 safety contest is the Irwindale plant of Consolidated Rock Products Co., Los Angeles. Class A is open to plants producing more than 500,000 tons of sand and gravel during the contest period. Its trophy was also taken by the Irwindale plant in 1958.

In all three classes of competition, there were many entrants with accident-free records. The winner of each has the highest combination of tonnages produced and man-hours worked. In Class B (200,000 to 500,000 tons) the winner was the Indianapolis 15H (Harding Street) plant of American Aggregates Corp., Greenville, Ohio. Class C (less than 200,000 tons) winner was Kaw No. 2 plant of Stewart Sand & Material Co., Kansas City, Mo.

A new feature of the contest recognizes plants with five consecutive years without a lost-time accident. They will receive special certificates. The list includes: American Aggregates Corp., Greenville, Ohio, Fort Jefferson plant; Cemstone Products Co., St. Paul, Minn., Lakeland plant; Concrete Materials & Construction Div., American-Marietta Co., Cedar Rapids, Iowa, Waterloo plant; Consolidated Rock Products Co., Los Angeles, Calif., Claremont and Hewitt plants; Jahncke Service, Inc., New Orleans, La., Bluff Creek plant; Lorain Elyria Sand Co., Lorain, Ohio, plant; Edw. Lutz Sand & Gravel Co., Inc., Milwaukee, Wis., Sussex plant.

The list continues with: Lyman-Richey Sand & Gravel Corp., Omaha, Neb., Cullom, LaPlatte railroad, LaPlatte truck, Bridgeport, and Columbus plants; Material Service Corp., Chicago, Ill., Cayuga plant; Nathan Oaks & Sons, Inc., Oaks Corners, N.Y., plant; Pacific Cement & Aggregates, Inc., San Francisco, Calif., Centerville plant No. 106, Lapis-Prattco plant Nos. 109-110 and Olympia plant No. 125; Waverly Gravel & Tile Co., Shell Rock, Iowa, plant.

Connecticut to get new feldspar plant

FELDSPAR CORP., Spruce Pine, N.C., announced plans to build a new plant in Middletown, Conn. Cost is estimated at $1 million.

(Continued on page 46)

Enter 1431 on Reader Card

Special report to owners of Traxcavators, D6 and D4 Tractors

CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

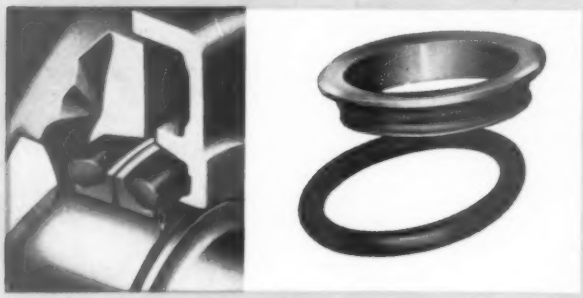
Now available...lifetime lubricated rollers...two-way savings...

ELIMINATE MAINTENANCE GIVE LONGER LIFE

Here's another cost-cutting improvement for Traxcavators and both D6 and D4 Tractors . . . lifetime lubricated rollers. Now you can eliminate on-the-job shutdowns for greasing. And you get longer life from rims, flanges, internal parts. The payoff . . . reduced replacement costs, savings in time.

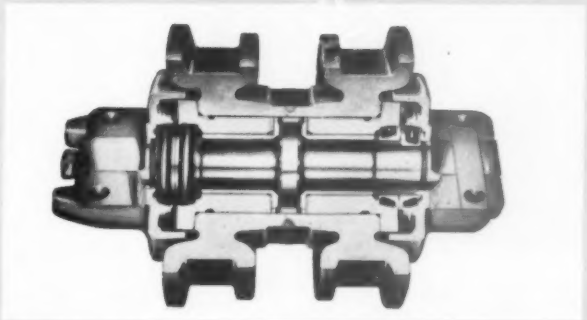
How maintenance is eliminated—the new Cat-built rollers are lubricated when first installed. They are equipped with floating ring seals that keep lubricant in . . . grit out . . . for the life of the rollers. Only when rollers are disassembled for rebuilding will relubrication be necessary. And the original metal rings can be reused.

New floating ring seal . . . only four parts, no springs. The roller seal employs two alloy metal rings and two rubber "O" rings. The metal rings, much harder than the best file steel, have lapped faces, smoother than glass. These faces taper slightly toward the inner edge forming a sealing area at the outer edge. As wear occurs, the sealing area moves gradually inward, maintaining a perfect seal for thousands of hours.



The "O" rings keep constant pressure on the metal rings. Lubricant can't get out. Grit can't get in. There are no springs or diaphragms to weaken, wear or become damaged. The "O" rings are made of special compound to resist oil, heat, cold.

Why do roller parts last longer? Grit is permanently sealed out. Big lubricant reservoirs (with strategically located oil passages) insure ample supply of lubricant to moving parts. Oil instead of grease is used for roller lubricant. Oil dissipates heat faster, circulates more freely than grease. These features assure you of longer shaft and bearing life. Longer bushings with extra-thick flange assures rigid support. Large sleeve bearings provide ample bearing area. Larger diameter, deep-hardened shafts withstand higher shock loads. Beam strength has been increased 63% for D6 shafts; 185% for D4 shafts. Resistance to side thrust is greatly increased in D4 shafts by a 25% wider center flange and 73% more thrust-bearing area.



Why do rims and flanges last longer? The new two-piece roller shell has greater strength and impact resistance. Special heat-treat process provides extra-hard and deep wear surfaces. Ample steel under tread gives strong support to resist shock loads. Thicker flanges combat peening over. Overlapping center joint maintains rigid shell without separate hub.

Easy installation is achieved by use of snap rings to hold the seals and end collars in place before mounting. End collar bolt holes will line up easily with track roller frame holes during installation.

Millions of hours of proof—the toughest track rollers yet. Cat lifetime lubricated rollers have been subjected to extensive and exhaustive on-the-job tests for over 5 years. Working on all types of job conditions, these time-tested rollers have proved to be unequaled. And machine-owner reports prove that Cat lifetime lubricated rollers can't be beaten for low-cost, minimum maintenance operation.

See your Caterpillar Dealer. He'll give you the full story on this time-saving, money-saving undercarriage component.

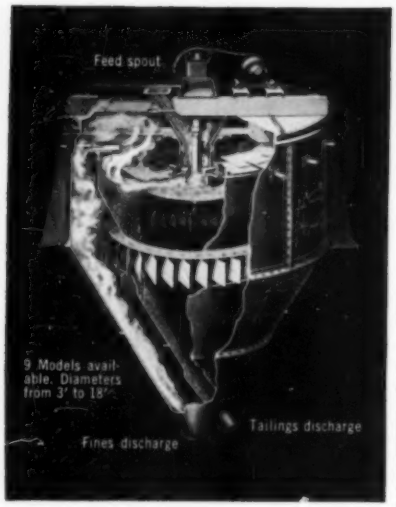
Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

SERVICE TIP: When rebuild time finally comes, be sure to keep the metal rings matched in original pairs, being careful not to nick or mar the lapped surfaces.

CATERPILLAR

Caterpillar, Cat and Tractavator are Registered Trademarks of Caterpillar Tractor Co.

In Cement and Aggregates the Word for Air Separation is "Sturtevant"



. in cement . . .

Sturtevant Air Separators make possible highly efficient closed-circuit systems. Large circulating loads increase output, eliminate overgrinding. Ball and lining life lengthens, power costs are lowered. Top quality cement results from precise control of finenesses. Standard 16 ft. Sturtevants deliver raw fines up to 70 tph, finished fines up to 260 bph.

in aggregates . . .

Sturtevant Air Separators classify sand without water, clean sand by de-dusting it. Pre-classification by air can also increase screening production by removing screen-blinding fines. In blending operations, Sturtevants select desired fines from grinder throughput. This graded product is then used to overcome fineness modulus deficiencies.

Send for Air Separator Bulletin No. 087.

STURTEVANT
MILL COMPANY
102 Clayton St., Boston, Mass.
Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators
Enter 1433 on Reader Card

(Continued from page 44)

Huron shows off its new distributing plant

THE HURON PORTLAND CEMENT Co. held a public inspection of its newest distributing plant at St. Joseph, Mich., November 10. More than 400 guests attended a luncheon and open house to mark the plant's opening. It is the 13th in Huron's chain of distributing plants in Great Lakes cities.

In the photo may be seen the 10 silos and office building, the 600-ft. dock and the railway extensions leading to the plant. The silos can store 150,000 bbl. of cement. Six self-unloading bulk cement freighters bring cement to the plant from the company's mill at Alpena, Mich. Huron is a subsidiary of National Gypsum Co.

Cement industry round table at controllers' conference

DATA PROCESSING and sales reporting were discussed at a cement industry round table during the national conference of the Controllers Institute of America. It was held October 25-28, Penn-Sheraton Hotel, Pittsburgh.

R. William Rose, vice president-finance, Lehigh Portland Cement Co., presided at the cement session. Vice chairman was Kenneth A. Conningham, assistant to vice president and general manager, Permanente Cement Co. Earl W. Denby, controller, Huron Portland Cement Co., spoke on data processing equipment and its application in a cement company. A discussion on the paper was led by Harold L. Irick, treasurer, Louisville Cement Co. The group also discussed "Differences in industry practice for reporting sales," led by Harold F. Stepanek, secretary-treasurer, Alpha Portland Cement Co.

Diversification is noted throughout the industry

CEMENT PRODUCERS entering the ready-mix market, and vice versa, highlight industry-wide diversification moves. There also has been a report that an asbestos company, United Asbestos, is seeking to acquire an interest in a concrete block and a concrete products firm.

Colonial Sand and Stone Co., New York, prominent eastern aggregates and concrete producer, is enlarging its cement plant at Kingston, N.Y. This move, said its president, Anthony Pope, would make its cement available to other users besides itself. The Kingston plant of Colonial, built in 1958, is expanding capacity from 900,000 to 2 million bbl. per year. Colonial also is constructing a stone producing plant near the Kingston cement plant. The new mill, with an initial hourly production of 500 tons of crushed stone, will supply about one-fourth of the firm's requirements. It had been purchasing all its crushed stone.

Another example of diversification is seen in the purchase of The Pioneer Sand and Gravel Co., Seattle, Wash., by Lone Star Cement Corp. All shares of the Seattle firm were acquired by Lone Star in the multimillion-dollar transaction, but Pioneer will continue to operate without change in policy, name or personnel. Concluding the deal with Lone Star Cement's executive vice president, John H. Mathis, was Gordon N. Scott, president of Pioneer. Formed 52 years ago through the merger of three firms, Pioneer has annual sales of $6 million. Ready-mix is produced at four Seattle-area locations, sand and gravel at Steilacoom.

Another cement producer that intends to enter the ready-mix market is St. Lawrence Cement Co., with plants at Villeneuve, Que., and Clarkson, Ont. The company holds or has options on land with sand, gravel and stone deposits, but prefers to buy into an existing organization. Its offer to purchase 500,000 shares of Standard Paving & Materials, Toronto, set off heavy buying of the latter stock by Canadian interests who wished to keep control of the company in Canada. St. Lawrence is Swiss-controlled.

The transaction initiated by United Asbestos Corp., if completed, would give it 50-percent interest in Thorold Concrete Block Co., Ltd., for $1 million. It also would acquire a 5-percent interest in Capital Concrete Products, Ltd., for $60,000, "with first right of refusal to purchase the balance of outstanding stock."

(Continued on page 48)

Enter 1434 on Reader Card

Produces Tremendous Tonnages

Eliminates Need for Intermediate Crushing

Reduces Number of Secondary Crushers, Screens, Conveyors

buy Cedarapids Built by IOWA

That's Why
Cedarapids Double Impeller Impact Breakers
INSURE LOWEST COST PER TON

Size for size, Cedarapids Double Impeller Impact Breakers outproduce any other type of primary crushing unit! Six models meet tonnage demands ranging from 50 to over 1000 tons per hour.

Intermediate crushing is unnecessary in many conditions...the Double Impeller's high ratio of reduction (40 or 50 to 1) reduces large size rock to as small as ¼" minus in one pass. You need fewer secondary crushers, screens, conveyors, etc. to produce specification product.

Think what this means to your equipment budget . . . and your profit on each ton produced!

You can meet specifications in the toughest conditions . . . produce cubical-shaped stone without flats or slivers even from slabby material. In many gravel operations, Cedarapids impact breaking is the only way to get the specified crushing percent and eliminate soft materials to up-grade aggregate and meet various soundness tests.

For either stationary or portable operations, check the benefits of Cedarapids Double Impeller Impact Breakers. Send for Bulletin DI-1, or see your Cedarapids Dealer for details.

IOWA MANUFACTURING CO. • Cedar Rapids, Iowa, U.S.A.

LOW MAINTENANCE—With 50% of rock broken in suspension, Cedarapids Impact Breakers receive less wear, require less maintenance. Every penny saved on maintenance, every minute saved from downtime, helps reduce your cost per ton.

HIGH PRODUCTION—Each Cedarapids plant and component is engineered for extra high capacity. The greater your hourly production, the lower your operating costs!

ABILITY TO MEET SPECIFICATIONS—Every ton of material that *almost* meets specifications is a ton wasted! Cedarapids equipment permits you to meet specifications right on the nose for profit on every ton.

THE EXACT UNITS YOU NEED—The Cedarapids line of aggregate producing units is *complete* for portable and stationary operations. You can choose the plant you need to make money in whatever conditions you may encounter.

PROMPT SERVICE from the Cedarapids factory and from Cedarapids' country-wide dealer organization is as close as your phone to help you solve difficult production problems.

WASH WATER goes UP . . .

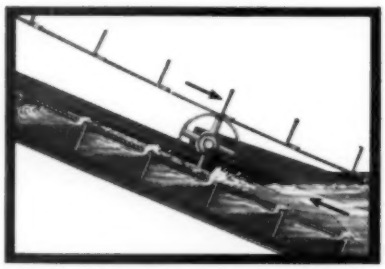
slimes cannot remix with sands
. . . in the "OVERDRAIN" Classifier

The "Overdrain" Classifier is a completely new device in the field of mechanical wet classifiers. The belt, with lifting flights attached beneath, moves upwardly out of the sand bed between two stationary side shrouds—creating the effect of a series of moving, closed, washing compartments.

The only outlet from these compartments is via holes in the belt above. Surplus liquid and slimes discharge through these "overdrain" holes without mixing with the oncoming sands. The end result is an extremely clean sand discharge, excellent de-sliming—making the "Overdrain" Classifier an ideal washing device.

Acid-proof construction available.

Write for
Hardinge Catalog 39-C—7



Section through "Overdrain" Classifier showing upward-moving, closed, washing compartments.

Unretouched photograph of "Overdrain" action above the belt—water and slimes discharging upwardly.

HARDINGE
COMPANY, INCORPORATED

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New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco • Birmingham • Jacksonville Beach

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(Continued from page 46)

Asbestos activity spotted at two California deposits

NAPA AND STOCKTON, CALIF., will be centers of asbestos mining activity following recent purchases. The Clute Corp., Denver, Colo., has bought mineral rights to the 202-acre Napa deposit from Asbestos Bonding Corp. It will expand open-pit mining operations to increase production from 50 to 1,000 tpd.

The Stockton area has attracted the investment of Jefferson Lake Sulphur Co. of New Orleans. The company has acquired from American Asbestos Co., New York, a 480-acre site on which it will build a $5-million mill. Cost of the land, having a 15-million-ton proven reserve of chrysotile asbestos, was $4.2 million. Completion of the mill is scheduled for early in 1961.

The plant will have a 2,000-tpd. capacity, said Eugene H. Walet, Jr., president of Jefferson Lake. This is enough to supply one-third of California's needs. California is the nation's second largest user of asbestos fiber, and has imported nearly all its fiber from Canada and South Africa.

Safety films released

NATIONAL SAFETY COUNCIL, 425 N. Michigan Ave., Chicago, Ill., announces the availability of four new films on safety. Said to present "a fresh, realistic solution to the ever-present problem of communication," the films use every-day, supervisor-worker situations. "Communication for safety" is the title of the series, available together or individually.

Housing starts sag 11 percent in October

THERE WAS A MAJOR DROP in housing starts during October 1959, according to the Commerce Department. Private housing starts, at a seasonally adjusted annual rate of 1,180,000, were 11 percent below September. However, the first 10 months of the year averaged 1,356,000, considerably above the 1,089,000 rate for the same 10-month period in 1958.

Starts on publicly financed housing units totaled 3,000 in October, bringing the 10-month total to 32,900, far below the 63,800 figure reported for the like 1958 period.

(Continued on page 53)

Enter 1460 on Reader Card

Now "trade" dead weight for payload..and haul 40% faster!

Heap-load the big-target Payhauler body in minimum time. Strong rock-ribbed corrugations absorb shock—resist wear and distortion. Choose the "95" with power-shift Torque-Converter, or 9-speed air-shift transmission.

New strength-multiplying corrugated body design results in payload-gaining weight reduction of both International Payhauler models. New "95" capacity is increased to 27 tons—and the new "65" becomes the only 19-tonner on the market!

Look at those exclusive, rock-ribbed body corrugations! International applies this strength-multiplying principle to reduce Payhauler® body weight by an amazing 30%! You "trade" 2½ tons of power-wasting dead weight for 3 bonus tons of payload capacity in the new 95 Payhauler!

New high-torque, high-output diesel power highballs 27-ton payloads up to 40% faster than the former "95" could haul only 24 tons! The new 375 hp DT-817 International diesel engine gives the new 95 Payhauler the wallop of 40 extra turbocharged "horses."

Prove to yourself that top load-carrying capacity plus top power-to-weight ratio give 95 Payhaulers tremendous profit-earning advantages. Add up other big Payhauler exclusives: fast reverse, up to 7.1 mph. for spotting speed; big-target bodies for loading zip; 11-second inverted-hoist dumping; load speeding safety of torqmatic braking and positive power-steering! Let your International Construction Equipment Distributor demonstrate!

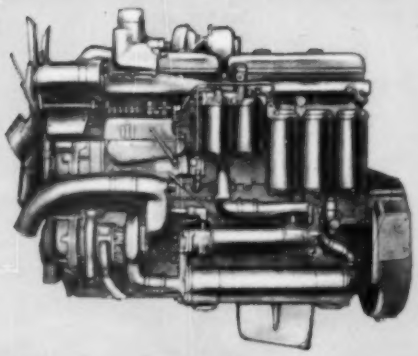
International® Construction Equipment

International Harvester Co., 180 N. Michigan Ave., Chicago 1

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Planet power steering with

gives new 230-hp TD-25 class-topping



Here's the new direct-start 6-cylinder turbocharged International DT-817 diesel that powers the TD-25. Dual valving of this high-torque 230-hp power plant provides for peak turbocharging efficiency, for full power delivery from sea level to timberline!

built-in power-shifting capacity!

You get combined Planet Power-steering and Hi-Lo on-the-go power shifting exclusively in the new International TD-25 crawler. As standard equipment at no extra cost, the TD-25 gives you the International-developed control combination that has been beating the daylights out of king-sized clutch-steered crawlers for years!

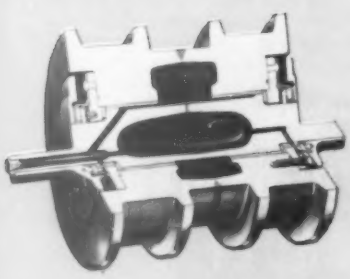
With this and all its other big advantages, the TD-25 can outearn other big rigs up to 50%—on highwalling, benching and side-casting, as well as on straight dozing to remove overburden, or to harvest minerals or building materials!

No "dead-track drag" or "gear-shift lag"! Planet Power steering gives you full-time "live" power and traction on both tracks to make full-load turns—and eliminate load-limiting dead-track drag. And Hi-Lo on-the-go power shifting instantly matches power to condition to prevent load-losing "gear-shift lag." You power-steer and power-shift the new "25" with 2-finger ease!

Hi-Lo power-shifting makes the TD-25 the industry's only 4-speed torque-converter crawler, and the only one with load-matching efficiency-range control. In the synchromesh transmission TD-25, the Hi-Lo planetary system gives eight speeds forward and reverse—with cycle-speeding up-or-down, on-the-go shifting!

Power-shift and power-steer the new TD-25 with full king-size loads—around curves, upgrade, anywhere. See what it means to command full-time, full-load ability to outearn clutch-steered king-size crawlers up to 50%. See your International Construction Equipment Distributor for a demonstration!

Keep full loads on the move full time with exclusive Planet Power steering. Full power on both tracks full time is the answer! Hi-Lo, on-the-go power-shifting lets you match power to condition—instantly—and keep the yard-boosting advantage of uninterrupted momentum. On benching or highwalling, simply operate the bank-side track in high speed range, while keeping the outside track in low range—for full-bite, full-blade performance.



Thickest-shelled roller design in the crawler industry — with king-size lube reservoirs and seal-protecting pressure-relief passages —combine to make TD-25 Dura Rollers the ones you can power-lubricate without affecting seal life or efficiency!

International® *Construction Equipment*

International Harvester Co., 180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Can your loader "lift its lip" and duplicate dozer action? No?

Then trade it off without delay! Because you'll miss money-making opportunities right and left without this big-capacity 4-in-1 action. And you have positive "radius control" of dozing depth; plus strength for hard digging! Here, the new International Drott TD-20 4-in-1 is dozing heavy gumbo material like a full-size blade!

Can your loader grade and strip like a carry-type scraper? No?

Then consider what extra service—and extra-valuable service you would have—with versatile scraper-like action at your fingertips with a moderately-priced 4-in-1! This TD-20 4-in-1 is stripping sticky clay. It can also grade or spread materials with similar accuracy.

ONLY A CLAM-ACTION 4-IN-1

can replace up to $100,000 of limited-duty equipment!

Can your loader "bottom-dump" and handle sticky materials? No?

Then retire the "relic" and go modern! You can't choose the materials you excavate. You can't prevent adverse weather that makes materials sticky! But 4-in-1 bottom-dumping eliminates the sticky materials problem and gives you a vital dumping height plus advantage over ordinary roll-forward buckets.

Move the selector lever—prove to yourself only the clam-action 4-in-1 doubles for a whole spread of "big-ticket" rigs—gives instant changeovers. Compare 4-in-1 capacity and versatility to any single-action loader. Measure exclusive shock-swallowing Hydro-Spring advantages. See your International Drott Distributor for a demonstration—prove you can save up to $100,000 on equipment!

Does your loader have measured, advertised breakout action? No?

It's the genuine and exclusive pry-over-shoe breakout action that enables International Drott 4-in-1's to replace far costlier boom-type rigs on jobs like breaking up and loading out hard, heavy stratified or embedded materials. The NEW TD-15 4-in-1 exerts the enormous force of 39,200 lbs!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®

(Continued from page 48)

First phase of expansion over at Hagersville plant

CANADIAN GYPSUM CO., Toronto, has completed the first phase of a multimillion-dollar expansion program at its Hagersville, Ont., plant. A 50-percent increase in gypsum plaster production has resulted. Early this year, new facilities for manufacture of Rocklath plaster base, sheetrock gypsum wallboard and gypsum sheathing will double original plant capacity.

Other Canadian Gypsum Co. expansion projects include the enlargement of lime production facilities at Guelph, Ont., and a new warehouse at the Montreal plant.

Ohio cement plant adds dust collectors

THE MOVE TOWARD CLEANER AIR in industrial southwest Ohio is being furthered by installation of a $775,000 dust-collection system at Universal Atlas Cement Co.'s Fairborn, Ohio, plant. It includes eight sections, with 54 bags to the section, of 12-in-diam. x 25-ft.-long fiberglass bags.

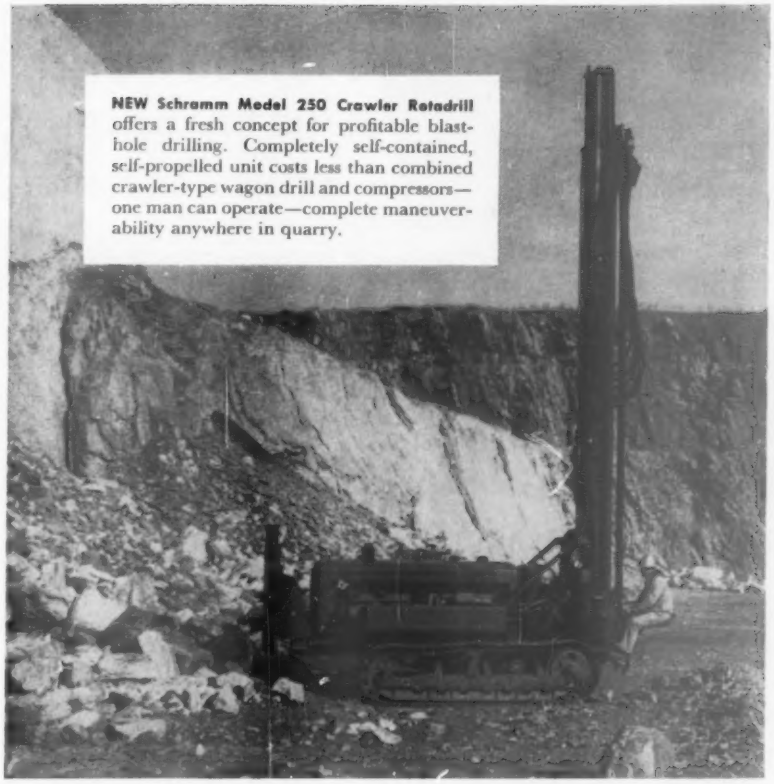
Company officials outlined the plan to the Fairborn City Council, saying the system would be completed sometime this year. T. J. Griffeth, plant manager, said dust trapped by the mechanical filters has been returned to the production process. Whether the high-alkaline dust removed by the fiberglass bags can be reused was being studied.

German experts appraise Quebec asbestos fiber

GUENTHER SCHMIDT, secretary of the West German Asbestos Manufacturers Association, touring the Johns-Manville asbestos mine at Thetford, Que., said Canadian asbestos is superior to Russian fiber. Mr. Schmidt headed a party of asbestos manufacturers from France and Germany on a tour of North America.

Quebec fiber, he said, is longer, and grading and quality-control methods are stricter than in Russia. "The 37 West German asbestos manufacturers import some 80,000 to 90,000 tons of asbestos a year," said Mr. Schmidt. "About 45 percent of this comes from Canada, while the balance, mainly short fiber, is divided between South Africa and the USSR."

(Continued on page 54)



NEW Schramm Model 250 Crawler Rotadrill offers a fresh concept for profitable blast-hole drilling. Completely self-contained, self-propelled unit costs less than combined crawler-type wagon drill and compressors—one man can operate—complete maneuverability anywhere in quarry.

QUARRIES SEEKING TOP PROFITS USE SCHRAMM ROTADRILLS TO

Remove more tonnage at less cost

The more holes you drill, the more blasts you set off, the more tonnage you remove—the more profit you make. It's as simple as that. And that's exactly what you do with the Schramm Rotadrill, everytime! It's a sure fire way to make any quarrying operation more profitable. Look how these advantages can reduce your blasting costs.

Faster drilling rates. Rotadrills penetrate faster than other rigs because hydraulic down pressure is automatically regulated and an abundant supply of air removes the chips instantly and keeps the hole clean. Quarries report increased penetration of 55% to 66% in hard rock.

Less manpower. One man can move machine, drill, change steels without assistance. Sets up, ready to go in minutes—takes fewer man hours.

Lowest cost per ton. Schramm Rotadrills save time and manpower—cost less to operate. Let us show you how to cut your blasting costs with the Schramm Rotadrill. Write today for complete information.

Visit Booth 38 at the N. C. S. A. Convention to learn how Schramm Rotadrills can lower your costs—increase your profits.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

645 North Garfield Ave. • West Chester, Pa.

Schramm 250 cfm Pneumatractor Rotadrill averages 12′ to 15′ per hour in very hard limestone with straight rotary drilling. With Rotatool, for bottom hole drilling, rates exceed 22′ per hour in hard limestone and 15′ per hour in trap rock.

Truck Mounted Rotadrills are gasoline or diesel engine driven, drill 6" holes with 26,000 pounds down pressure. Also available, Crawler Rotadrill (8" holes with 28,750 pounds down pressure) and "Do-it-yourself" package for mounting on your truck or tractor.

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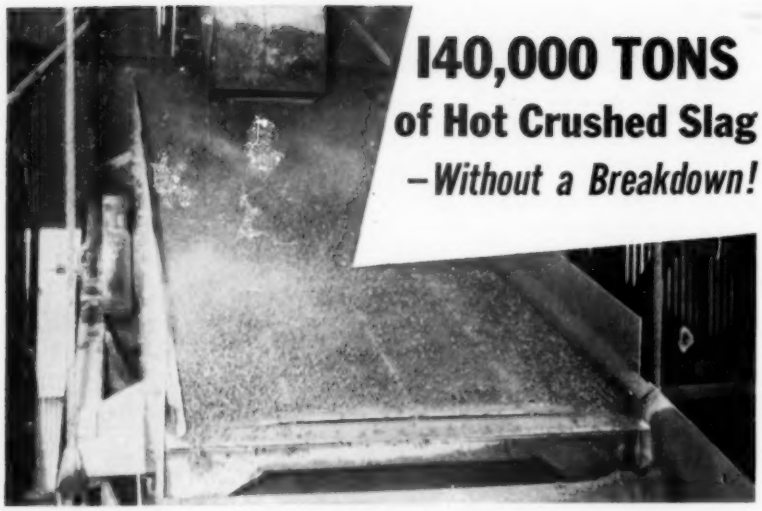

140,000 TONS
of Hot Crushed Slag
—Without a Breakdown!

WITH CLEVELAND "CLELOY" SCREEN SECTIONS

• With results like this a leading Midwestern slag plant saved money over a five-day week, 11-month period using a screen engineered to their requirements by Cleveland Wire Cloth and Manufacturing Co.

Cleloy screen sections are manufactured and woven to withstand high abrasion, corrosion and continuous process steam. Properly applied, they produce high tonnage, reduce blinding and require minimum maintenance.

For amazing results in your screen operations—write or call your specifications today.

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OF THESE BROOK A.C. MOTORS

THE Open Drip Proof NEMA Rerate Motor occupies less space—weighs 12 to 15% less than the Open Drip Proof Motor in the old frame. This is no case of "Riding horse versus draft horse"—both motors have equal stamina. Some prefer the old frames, especially where space is no factor. Brook warehouses coast-to-coast carry both types in stock. You can't find a better motor at any price, yet Brook Motors cost substantially less, because of volume production, modern techniques, world-wide distribution and a realistic pricing policy. Brook Motors available from 1 to 600 H.P. All standard enclosures. Write for literature and name of your Brook Dealer.

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SINCE 1904 BROOK MOTOR CORPORATION

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(Continued from page 53)

Sand screening, settling booklets are available

TWO BOOKLETS on sand preparation that were originally published as a service to ROCK PRODUCTS readers are still available and may be had by writing this magazine. Nathan C. Rockwood's "Screening Fine Materials," copyrighted in 1946, is an authoritative discussion of determining factors in the operating efficiency of vibrating screens.

Another volume, "Fundamental Principles of Sand Settling," (copyright 1929 and 1943) was written by the late Edmund Shaw as a practical guide to commercial sand producers. A limited number of these standard references still on hand will be given to individuals requesting them.

Erie Sand & Gravel loses monopoly decision

THE FEDERAL TRADE COMMISSION ordered Erie Sand and Gravel Co., Erie, Pa., to sell the assets it acquired in purchase of the Sandusky Division of Kelley Island Co. in 1955. The commission agreed with an examiner's decision made in December 1958, that the deal was in violation of The Clayton (anti-trust) Act. Effects of the merger, said the judgment, were lessening of competition and a tendency to give Erie a monopoly in the sale of lake sand in the market—the southern shore of Lake Erie from Buffalo to Sandusky.

Report throws light on Maryland clay deposits

VALUABLE RAW MATERIALS exist for quality lightweight aggregate production in southern Maryland, according to a report that has been placed on open file for public inspection by the Geological Survey, Department of the Interior. It is titled "Bloating clay deposits in southern Maryland."

Many small samples of clay taken from the St. Mary's formation at widely scattered localities in the southeastern parts of Calvert and St. Mary's counties, when retained in a small electric kiln for 15 minutes at temperatures between 2,000 and 2,200 deg. F., yielded products that "compare favorably in weight, strength, water absorption and color with some of the best expanded aggregates produced in the U. S.," the report states.

(Continued on page 58)

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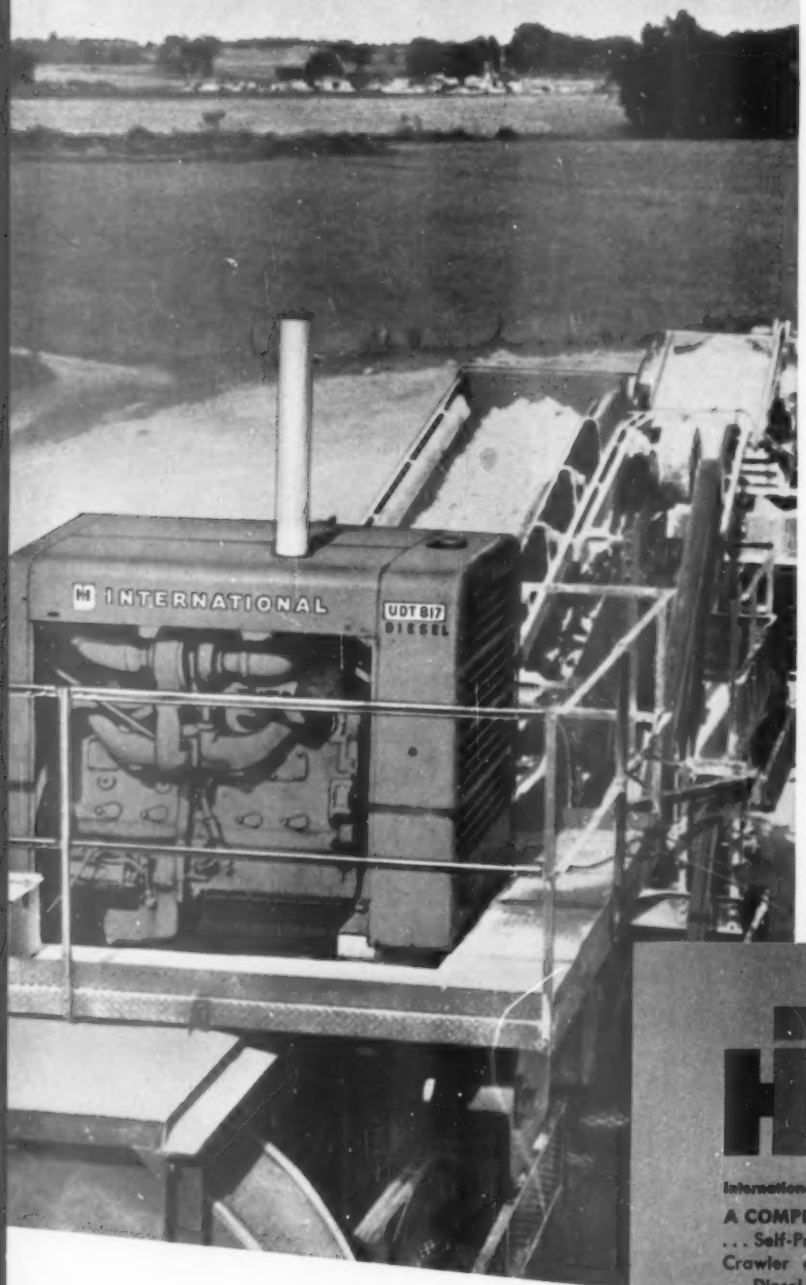
IH power

cuts cost-per-ton for road base material

"Only way we could make a profit on this job was to increase crushing volume, so we bought a new International UDT-817"



Reports Co-owner Eugene Nelson, of Madison Stone Construction Co. "When we contracted to supply Wisconsin's new Highway 49 with 50,000 tons of crushed rock at $1.56 per ton, we knew our profits would depend on continuous high production. For this we turned to International power. We aimed at a production rate of 180 tons per hour, but have been able to load a 15-ton truck every four minutes, or well over 200 tons per hour! Specifications called for crushing the hard Niagara limestone to one inch. We needed more power, but wanted a smaller unit, and this turbocharged International fills the bill."

When rising costs put you in a bind, contact your IH Engine distributor or dealer, and back up your bid with low-cost, dependable International power. Choose from 24 well-spaced models from 16.8 to 385 maximum horsepower—the fastest payback power.

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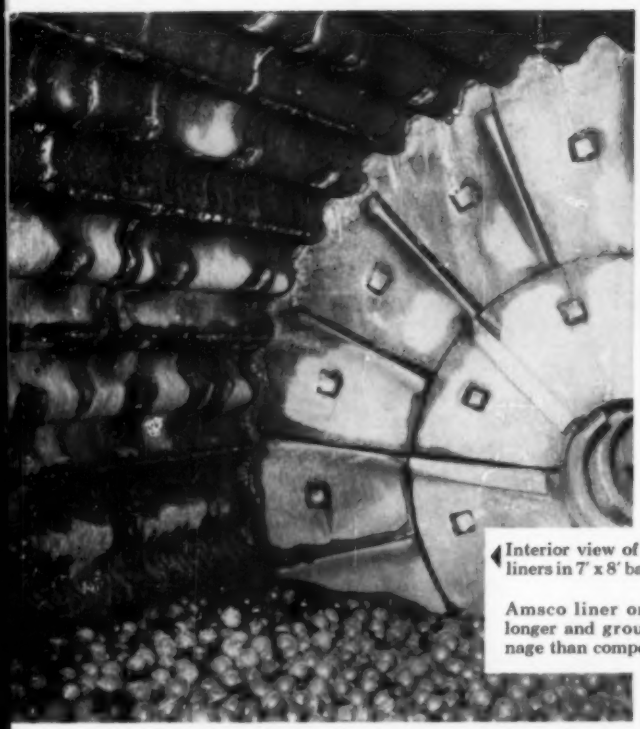
IH ENGINES

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

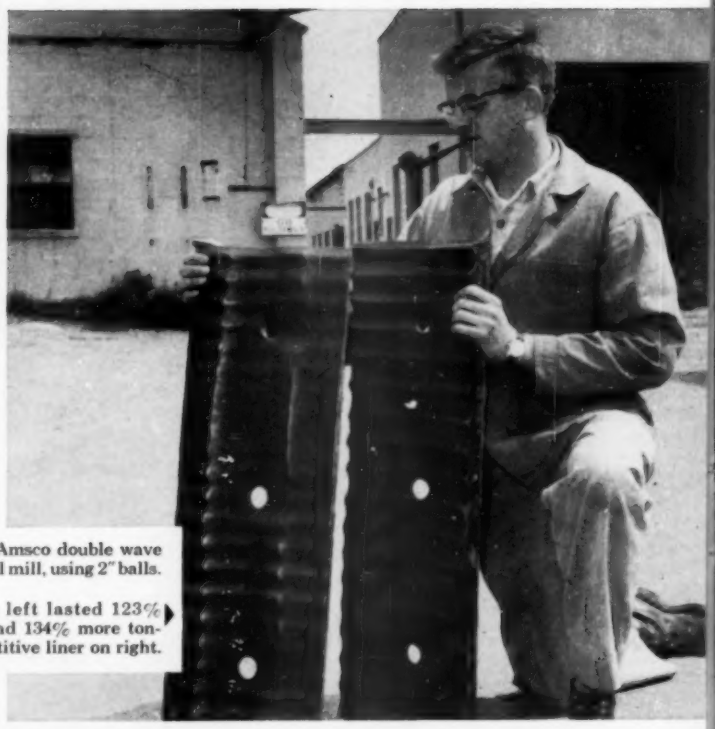
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

How AMSCO helps you HANDLE



Interior view of Amsco double wave liners in 7′ x 8′ ball mill, using 2″ balls.

Amsco liner on left lasted 123% longer and ground 134% more tonnage than competitive liner on right.



Bucyrus 88 D four-yard bucket, equipped with Amsco Simplex 2-part Teeth, removing rock for power station. All of Tuscarora Constructors' shovels used for rock excavation are equipped with Amsco Simplex Teeth.

MORE TONS PER DOLLAR

Read how AMSCO Mill Liners and Dipper Teeth are outlasting competitive parts in severe service

AT A LARGE NEW YORK ZINC MINE...

THEY'VE DOUBLED SERVICE LIFE WITH AMSCO CHROME-MOLY BALL MILL LINERS

Amsco double wave chrome-moly liners are used on an Allis-Chalmers 7′ x 8′ ball mill at this large northern New York zinc mine. The mill is operating *24 hours a day, six days a week* . . . grinding rod mill discharge consisting of sphalerite, pyrite and the balance silicate and limestone gangue.

These Amsco liners ground 670,000 tons during their 29-month life . . . as against an average of 286,000 tons and 13-month life for the type of liners previously used. That adds up to over *100% increase in service life.* In addition to their longer life, another fact that impresses the operators about Amsco liners is that there's no circumferential grooving until the very end of their service life.

TUSCARORA CONSTRUCTORS HAVE FOUND...

AMSCO 2-PART DIPPER TEETH ARE "BEST-WEARING TEETH WE'VE EVER USED"

At the Niagara Power Project, Tuscarora Constructors are building the power station and pumping station. They're digging almost entirely in rock, working their dippers 24 hours a day, six days a week.

Dell Lundmark, Equipment Superintendent for Tuscarora, was responsible for selecting Amsco 2-part reversible teeth for his dippers. He'd heard of their fine performance elsewhere, and now describes them as the "best wearing teeth we've ever used". He says the design of the teeth is very good for rock, and adds, "We're getting *15% to 20% longer wear* than from competitive 2-part teeth".

Approximately 10,000 tons of rock are handled before the teeth are turned over . . . and tips are easy to replace when completely worn.

This combination of a new alloy steel, plus the design features engineered into the Amsco Simplex Teeth, are causing equipment superintendents everywhere to change to Amsco for better, lower cost digging.

AMERICAN Brake Shoe COMPANY

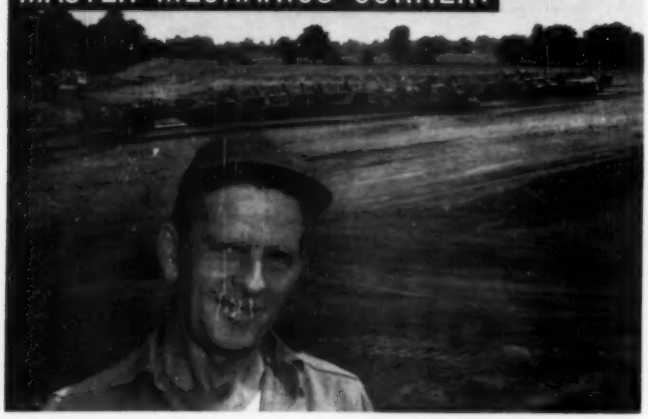
AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

Other Plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis

In Canada: Joliette Steel and Manitoba Steel Foundry Divisions

MASTER MECHANICS CORNER:



Russ Hill, Master Mechanic in charge of 67 machines for Holloway Construction Co., building 27 miles of highway . . . Albion to Battle Creek, Michigan

"Only Cat Dealers offer so many services . . . parts assembly exchanges, rebuilding, shop and field repairs and immediate availability of almost all parts."

Caterpillar Tractor Co., General Offices, Peoria, Ill., U. S. A.
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STEP UP PRODUCTION . . . PROLONG EFFECTIVE SCREEN LIFE
with Hanco ELECTRIC SCREEN HEATERS

- QUICK, EASY INSTALLATION
- TROUBLE-FREE OPERATION
- DUST PROOF
- LOW MAINTENANCE COSTS
- ADAPTABLE TO ALL SCREENS

START achieving maximum screening efficiency and continuous high tonnage production by installing proven HANCO SCREEN HEATERS which

STOP screen cloth blinding, costly shutdowns, screen damage and too-frequent replacement due to abusive mechanical screen-cleaning methods.

HANCO ENGINEERS will promptly analyze your requirements and make recommendations for more profitable screening of your products.

Hanco

WRITE TO
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1605 Waynesburg Rd. SE., Canton 7, Ohio
CABLE ADDRESS: HANCO

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(Continued from page 54)

Asbestos production reported

U. S. BUREAU OF MINES has reported a slight decrease in world production of asbestos in 1958. In Quebec, production decreased 12 percent, and in British Columbia, it increased two percent. U. S. production increased in 1958 less than one percent. Domestic sources supplied six percent of U. S. requirements, and most of the crudes No. 1, 2 and 3 produced in Arizona was purchased by the General Services Administration.

	1957	1958
United States:		
Production (sales)		
Short tons	43,653	43,979
Value (thousand dollars)	4,918	5,127
Imports (unmanufactured)		
Short tons	682,732	644,331
Value (thousand dollars)	60,104	58,814
Exports (unmanufactured)		
Short tons	2,893	3,026
Value (thousand dollars)	350	424
Apparent consumption		
Short tons	723,492	685,284
Exports of asbestos products		
Value (thousand dollars)	15,223	13,233
World:		
Production:		
Short tons	2,070,000	2,020,000

Insulating product uses rock products

ASBESTOS, DIATOMITE AND LIME are used in the manufacture of a new molded high-temperature industrial insulation known as thermobestos. To produce the product for the Canadian market, Johns-Manville Corp.'s Toronto mine will be expanded. Thermobestos is said to have had wide acceptance in the petroleum, chemical and marine fields and other industries, and is particularly suitable for withstanding severe conditions.

Free cement grants totaled by Arkansas Cement Corp.

DURING THE FIRST FIVE MONTHS of its industrial aid program, 21 grants of free cement were made by Arkansas Louisiana Gas Co., through its subsidiary, Arkansas Cement Corp. Beginning June 1, the company awarded grants totalling 17,781 barrels, valued at $63,000. Ten of the grants qualified for the maximum allocation of 1,000 bbl. each.

The cement is available to any nonprofit community industrial group which is building a plant to house a new industry. W. R. Stephens, ALG president, said his firm was "agreeably surprised at the volume of industrial activity taking place in Arkansas . . . . we are pleased to be able to participate in this tangible way."

(Continued on page 60)

SIMPLICITY

3' x 10' Model OA—10—A3

GRIZZLY FEEDER

eliminates need of apron feeder and scalper . . .

Rock can't jam . . . hourly operating costs lowered

3' x 12' Model OA—10—A3

The unique design of the Simplicity Grizzly Feeder, which combines feeding and scalping in one operation, eliminates rock jams thus assuring positive uniform flow of material into the crusher.

One operator of a Simplicity Grizzly Feeder says: " . . . we have used the heaviest type of apron feeders for years and have found it necessary to shut down at least 2 or 3 times a year to hard surface the flights, inasmuch as our material is so abrasive . . . we installed a Simplicity (Grizzly) Feeder . . . with 1/4" pan and 3/16" liner . . . and are glad to report that, AFTER 9 MONTHS OF CONTINUOUS OPERATION, THE FEEDER PAN SHOWS PRACTICALLY NO WEAR WHATSOEVER, and is operating around the clock doing an excellent job of feeding at all times . . . "

The Grizzly Feeder costs less than 50% of the combined apron feeder and scalper . . . weighs considerably less . . . makes a more compact plant . . . and reduces loading height by several feet. While these factors show up so prominently in portable plant production, they are just as effective in a permanent plant installation for the crushed stone, sand and gravel and mining industries.

214

Send for Catalog #571 for complete information on OS-A-VEYOR and GRIZZLY FEEDERS.

SALES REPRESENTATIVES IN ALL PARTS OF THE U. S. A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario
FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, New York

Simplicity
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ENGINEERING COMPANY • DURAND 13, MICHIGAN

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HAYWARD CLAMSHELL BUCKETS

**WORK LONGER,
WORK FASTER,
WEAR LESS!**

Designed with rugged, one-piece alloy shells... wide type, cast manganese steel cutting edges... smooth shell interior for fast, capacity loads and easy discharge... manganese bushings... diagonal truss brace to keep shell in line... has no side sway or back lash... *plus many other cost-cutting design features!*

Get complete details. Write today for illustrated bulletin.

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50 CHURCH STREET, DEP'T R, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888

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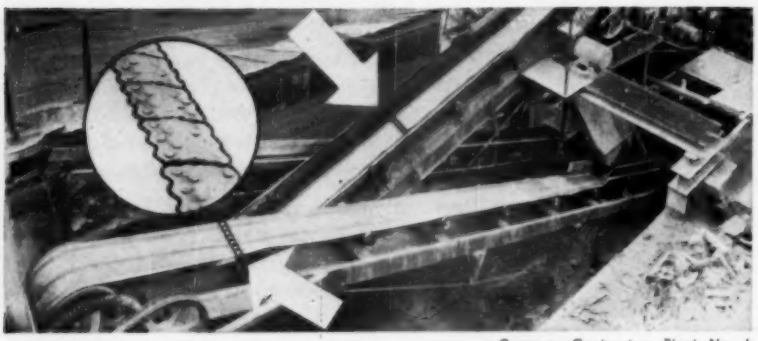
"We tried them all— then standardized on CRESCENTS"



Camarco Contractors Plant No. 1

"Our conveyor belts take a terrific beating and only a rugged fastener will hold them. We found that CRESCENT plates did a superior job, and because of the speed with which they can be attached with CRESCENT self-clinching rivets . . .

WE CUT OUR DOWN TIME IN HALF!"

NO HOLES TO BORE • NO TOOLS NECESSARY • A HAMMER IS ALL YOU NEED!

CRESCENT BELT FASTENER CO.

381 Fourth Ave., New York, N. Y.

TORONTO, CANADA **BIRMINGHAM, ENGLAND**

Distributors throughout the World

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(Continued from page 58)

ASTM meeting told progress is dependent on materials

"EVERYONE CAN INSTANTLY BRING TO MIND," said ASTM President Frank L. LaQue, "some scientific or engineering development that has been, or still is, dependent on improvement in materials." He was addressing a luncheon meeting during the American Society for Testing Materials third Pacific area national meeting in San Francisco.

To bear out the theme that progress depends on advances in materials, session topics delved into all aspects of their improvement, from space age requirements to closer-to-home industrial uses. For instance, in a symposium on road and paving materials, degradation of base course aggregates under wheel loads was discussed. Martin Ekse and Henry C. Morris of the University of Washington said that, especially under flexible paving mats, heavy traffic will tend to produce not only a progressively finer general aggregate grading than was initially placed in the base course, but also an excess of fine material in the particle-size range of silt and bordering on that of clay. The results: reduction of angularity and interlock of the coarser particles and some "lubrication" of the coarser particles by increasing amounts of fine material distributed through the aggregate under moist conditions. They are attempting to establish an effective and practical test to evaluate this tendency.

The cement and concrete industry luncheon speaker was Felix Candela of Mexico City, one of the leading proponents of reinforced concrete shell structures. His statement that he did not need good concrete in these structures was provocative. The stress relationships and the abundance of reinforcing steel, he said, reduce the need for high-strength concrete. Senor Candela affirmed that hyperbolic paraboloids (umbrella-type shells) are an answer to difficult site problems, and are the easiest and most practical to build.

Adds dust collector

PORTLAND CEMENT CO. OF UTAH, Salt Lake City, has completed dust collection facilities incorporating Thermo-flex and Multiclone units. A 30 x 80-ft. building houses the collection system, installed at a cost of $200,000.

(Continued on page 62)

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D9

D9s take another hard work job in stride

Near Santa Anna, Texas, there's a vein of 99% pure silica sand 30 feet deep—enough to last one hundred years at present removal rates. To get to the sand, the Santa Anna Silica Sand Company has to blast and 'doze away a 60-foot layer of hard rock and shale overburden.

Working two shifts a day, two Caterpillar D9 Tractors move 2,000 yards a day, six days a week. It's all uphill for distances of 250 to 300 feet—but it's no struggle for the mighty D9s. One racked up over 5,200 hours and the other had almost that many—before the rails needed replacement. "That's really long wear when you consider the conditions they work in . . . all rock, shale and sand," observes Executive Vice President Robert L. Markland.

Conditions like these let the D9 really prove its superiority. Thirty tons of work-power, sparked by a 335 HP (at the flywheel) Turbocharged Cat Diesel Engine, pile into the job and keep production up in the roughest going.

For all its mighty power, the D9 is maneuverable and responsive. Hydraulic boosters help with braking, steering and clutching. The exclusive Caterpillar oil clutch rarely needs adjustment. The optional D9 heavy-duty torque converter transmission has the flexibility to quickly compensate for load changes. And now the D9 has new lifetime lubricated rollers and idlers that are service-free until time for rebuilding.

A new dry-type air cleaner that removes at least 99.8% of all dirt and dust from engine intake air during *every* service hour, under *any* conditions, makes the D9 even better suited for work in pits and quarries.

What can the D9 do to take the meanness out of your job, increase your production, bring your costs down? Your Caterpillar Dealer won't just tell you—he'll *show* you! Right on your job! Call him *now* for a demonstration date.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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THE TAKE-CHARGE D9—
BUILT FOR THE HARD WORK

HERE WE GO!
WAGON TRAIN
MORE TONS PER TRIP
A CONVENIENT WAY TO
UNLOAD — SIDE DELIVERY —
KEEP GOING. LEAVE
ROAD CLEAR FOR NEXT
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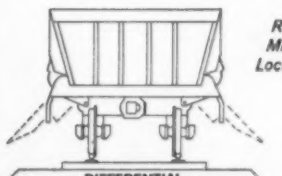

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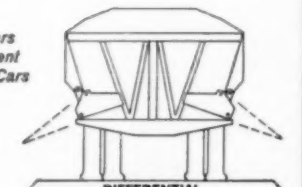

DIFFERENTIAL WAGON TRAIN ®

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for	One year	Two years	Three years
U. S. POSSESSIONS & CANADA	☐ $ 3	☐ $ 4	☐ $ 5
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Your position or title _____
(This is important in evaluating editorial emphasis)

I would like to see more ROCK PRODUCTS articles on: _____

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Please complete the form below indicating the principal product your company produces. If more than one, number in order of importance

☐ Crushed Stone
☐ Sand & Gravel
☐ Slag
☐ Cement
☐ Lime
☐ Gypsum
☐ Ready Mix Concrete
☐ Concrete Products

Type _____

Other nonmetallic mineral (What?) _____

(Continued from page 60)

Shaft modifications needed at Saskatoon potash deposit

F. O. DAVIS, president of Potash Co. of America, Carlsbad, N.M., told stockholders in Denver that funds were needed to continue modifications of the shaft at the Saskatoon mine. Mr. Davis said the high grade and extent of the Canadian deposits justify the continuing effort to put the operation on a commercial basis.

Engineering advice has been sought on protecting the shaft and stopping water flow. A freezing method, said Mr. Davis, was employed throughout the sinking of the shaft to stabilize water-bearing formations, and a reinforced concrete lining was installed. Because of pressure and temperature conditions, there has never been a completely tight seal of the shaft, and constant pumping is necessary.

Ore has been produced intermittently at Saskatoon, but not on a scale to permit efficient production from the mine or an exhaustive trial run.

Riverside superintendents discuss computer control

TWO SUPERINTENDENTS of Riverside Cement Co. Division of American Cement Corp., Peter B. Nalle and John M. Sauer, were enthusiastic in their discussion of computer control of cement kilns in a speech before the annual conference of Instrument Society of America.

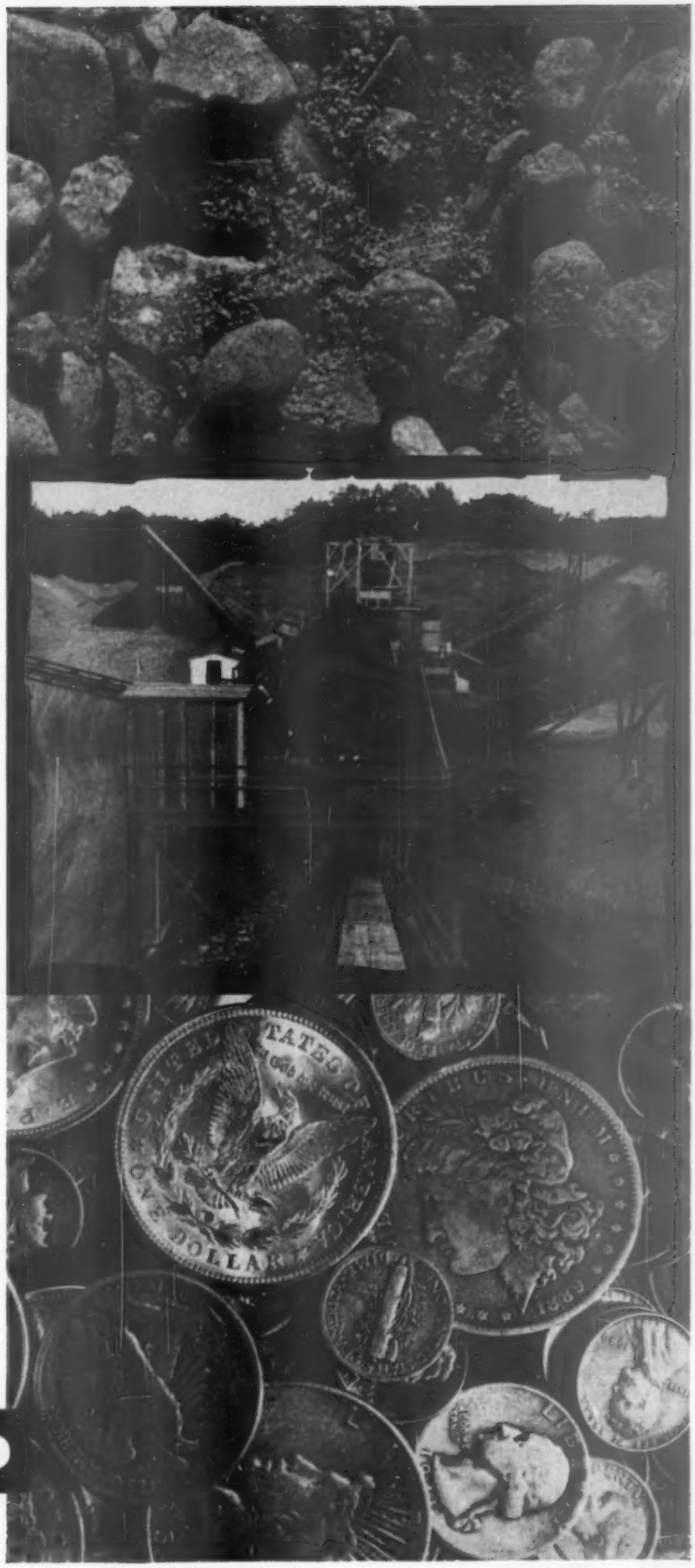
Mr. Nalle, mining superintendent, and Mr. Sauer, plant superintendent, told the meeting that computer control can increase production by as much as six to eight percent and reduce operating costs by a similar percentage. "While it is not a proven fact," they conceded, "we confidently expect to be in a position of admitting that we cannot afford to be without a computer."

Riverside recently installed a Thompson Ramo Wooldridge RW-300 digital control computer at its Oro Grande, Calif., plant, which has an annual capacity of 6 million bbl. (See "Computer masterminds raw materials blending," ROCK PRODUCTS, September 1959, p. 116.) The applications planned for the computer are (1) solving problems in connection with raw mix blending and (2) logging operating data with the ultimate objective of bringing the kilns under control of the computer.

(Continued on page 65)

AGGREGATE IS JUST SAND AND GRAVEL...

UNTIL WEMCO ENTERS THE PICTURE...



Today, you don't turn a sand and gravel deposit into real profits—unless you have a low-cost, volume operation—and a quality product!

So it is that so many operators turn to WEMCO for the shortcuts to sound, economical production. Through nearly 20 years' of experience in the aggregate industry, WEMCO has pioneered methods, engineered the equipment that consistently has been able to upgrade deposits to acceptable, marketable specifications. The WEMCO MOBIL-MILL, for example, is the first pre-fabricated, packaged heavy media separation plant, complete and ready for installation and operation; requires no additional labor, produces premium aggregate the first day! A complete line of other WEMCO EQUIPMENT for preparation, beneficiation and handling of aggregate, too, is available.

We'll be glad to furnish details on how WEMCO can work profitably for *you!*

A WEMCO man can give you details on getting the most out of your operation. Why not call him today?

WEMCO

a division of
Western Machinery Company, *Dept. R. P.*
650 Fifth St., San Francisco, Calif.
and throughout the world

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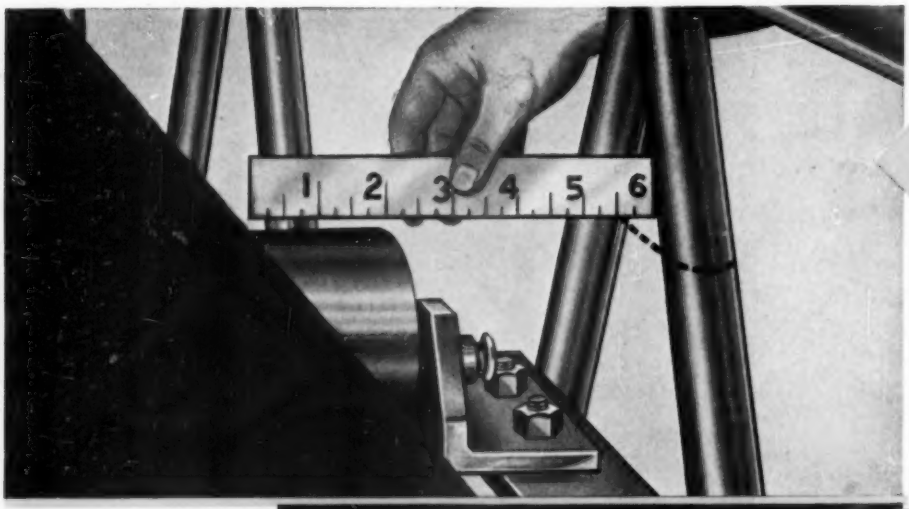
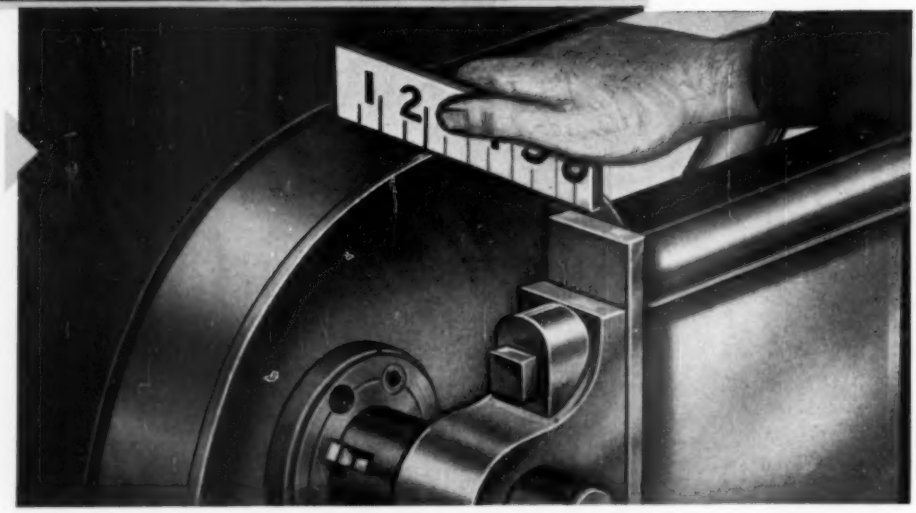


WIDER FRAME...
MARCO Tubular Frames are widest in the industry. They provide 100% more space (5½") in the critical area... between belt edge and nearest frame member. Pedestal type return idler brackets are used, instead of hanger brackets that confine and damage belt.

WIDER FACE PULLEYS...
MARCO is first with modern pulley specifications. 2" between belt and pulley edge... provides 100% greater protection than outmoded standards. Reduces possibility of belt destruction caused by "belt wandering" in high tension areas.



WHY RISK COSTLY, CONVEYOR BELT DAMAGE?

Only wider, MARCO Tubular Frame Conveyors provide maximum 'belt-edge' protection

Repairing or replacing conveyor belt represents the largest maintenance expense in a conveyor installation. To prolong belt life, MARCO conveyors are first to have all these belt-protecting features.

Wider Frame: Completely outmodes other conveyors that narrowly confine and damage belt should severe 'belt-wandering' occur.

Wider Face Pulleys: MARCO'S wider frame permits the use of modern, wider face pulleys to further protect belt from damage should 'belt-wandering' occur.

All Tubular Members: MARCO Tubular Frames are more rigid. Constructed of the strongest known structural member, these frames are modern ...and resist material and water build-up. Sharp 'belt-cutting' edges are eliminated with this exclusive construction.

Rigid Joint Construction: Another MARCO exclusive... 4 bolts in each connection... 16 in each joint. Not the usual 1 or 2 per connection. Joints are more rigid. Resists frame misalignment, simplifying belt training and increasing belt life.

If wind, uneven loading or other factors should cause 'belt-wandering'... with a MARCO frame you have the most complete protection possible against costly 'belt-edge' damage. This greater protection is yours at no greater cost.

MARCO'S Quality and Exclusive Features Mean More for Your Conveyor Dollar...

Remember, your conveyors are not mere plant accessories... they deserve the attention of a specialized manufacturer offering modern specifications, carefully and properly designed to meet your most exacting requirements. It will pay you to check MARCO quality, exclusive features and proven performance record before you buy.

For more information see your Marco distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

MARCO*

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engineered MARCO products:

Tubular Frame Belt Conveyors • Conveyor Idlers • Solid and Self Cleaning Steel Pulleys
Bucket Elevators • Control Gates • Feeders • Bins

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(Continued from page 62)

Standard Slag negotiates deal with Cleveland firm

THE STANDARD SLAG CO., Youngstown, Ohio, was reported negotiating for a controlling interest in Cleveland Builders Supply Co. An agreement signed by directors of the companies stated that Standard would buy, at $40 a share, all or any part, but not less than 51 percent, of the 116,287 outstanding shares of the Cleveland company.

The selling directors owned close to 50 percent of the Cleveland stock. They include John D. Kling, Guthrie Bicknell, Charles D. Barkwill, W. T. Rossiter, Herbert J. Farr, Jr., Jay C. Ehle, Harry D. Koblitz and Thomas A. Burke.

Standard Slag, of which L. A. Beeghly is president and W. E. Bliss is vice president, owns the Goff-Kirby Co. in Cleveland and operates its Cleveland Slag Division under the management of A. W. Wood.

ACL process makes progress in Far Eastern plants

THE ELEVENTH ACL CEMENT-MAKING process in the Far East is scheduled for installation at the Chichibu Cement Co. near Tokyo, Japan. It is designed to produce 700 metric tons (4,116 bbl.) per day, and is the largest installation so far in that part of the world. The equipment is being manufactured by Kobe Steel Works, Allis-Chalmers licensee in Japan.

All eleven plants for cement in the Far East have been sold within the last five years.

Lime stabilization reported by railroads

LIMEOGRAPHS, the National Lime Association newsletter, reported what is probably the first use of lime stabilization in the railroad industry. Southern Railway System, Washington, D.C., confronted with wet subgrade conditions at a new single-track location near New Orleans, stabilized the in-place clay to a depth of 6 to 8 in. with three-percent lime. Then it built up the rest of the roadbed with oystershell sub-ballast and coral shell ballast. The job, about 5 miles long, was reported successful. By avoiding costly excavation, it was economical.

(Continued on page 66)

Austin plastic connectors provide a quick fuse hook-up. Simply thread fuse from shot hole through length of connector and press trunk line into grooved slots. Then return branch line through end of connector on other side of trunk line and pull tight.

AUSTIN
Detonating Fuse

promotes blasting efficiency

Filled with a high explosive core, Austin Detonating Fuse possesses sufficient strength and speed to initiate an entire column of explosives . . . connects all holes with an effective detonating agent.

Austin Detonating Fuse is easy to handle, too. It's light in weight and flexible with a tough, waterproof coating that won't crack, chip or peel when being laid.

3 types—There's a type of Austin Detonating Fuse for virtually any purpose. Type 60 is standard. Type 100 is more powerful and for less sensitive explosives and blasting agents. Type 175 is for use with uncoated ammonium nitrates.

All 3 types are insensitive to shock, abrasion and strong electrical currents.

AA-9674

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POWDER COMPANY
CLEVELAND 13, OHIO

explosives ◆ ammonium nitrates ◆ primers ◆ detonating fuse
permissibles ◆ blasting supplies ◆ AP drill heads and bits ◆ mine tools

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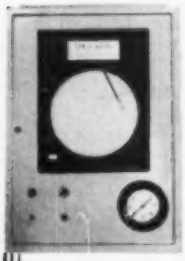
CONVEY WEIGH and CONTROL



your product with one integrated operation

Mechanize with

CON-O-WEIGH

The CON-O-WEIGH system can be installed as a simple weigh-belt mechanism or it can function as a process control system for conveyor-carried bulk materials. Equipped with variable-speed drive and an automatic speed compensation feature, CON-O-WEIGH is ideally adapted to complex feeding, blending and proportioning operations.

Its basic parts are simple . . . weigh section, load cell and control cabinet. Its application broad . . . records accurate running totals on loads of one to 5000 tons per hour.

The weigh bridge space requirements are small . . . can be adapted to existing or new installations.

Write for complete details.

Industrial Physics & Electronics Company

470 So. 13th East - Salt Lake City 2, Utah
Phone DAvis 8-8678

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CALENDAR

OF COMING EVENTS

January 18-21, 1960
American Road Builders Association, Annual Convention, Netherland Hilton Hotel, Cincinnati, Ohio

January 19-21, 1960
National Limestone Institute, 15th annual meeting, Statler-Hilton Hotel, D.C.

January 24-28, 1960
Associated Equipment Distributors, Annual Meeting, Conrad Hilton Hotel, Chicago

January 28-29, 1960
Expanded Clay & Shale Association, Annual Meeting, Hotel Roanoke, Va.

February 1-5, 1960
American Society for Testing Materials, Committee Week, Hotel Sherman, Chicago

February 15-19, 1960
National Sand & Gravel Association, Convention & Exposition, Conrad Hilton Hotel & Coliseum, Chicago

February 22-24, 1960
National Crushed Stone Association, Annual Convention & Exposition, Conrad Hilton Hotel, Chicago

April 28-30, 1960
Texas Aggregates Association, sixth Annual Convention, Hilton Hotel, El Paso, Texas

April 28-30, 1960
The American Institute of Mining, Metallurgical and Petroleum Engineers, Pacific Northwest Metals and Minerals Conference, Sheraton Hotel, Portland, Ore.

May 17-19, 1960
Cement Industry Subcommittee, American Institute of Electrical Engineers, Technical Conference, Pfister Hotel, Milwaukee, Wis.

May 23-25, 1960
National Lime Association, 58th Annual Convention, The Cloisters, Sea Island, Georgia

INDUSTRY NEWS

(Continued from page 65)

Pavement yardage

AWARDS OF CONCRETE PAVEMENT were classified by Portland Cement Association for the month of October and the first 10 months of 1959 as follows:

	Sq. yd. awarded during: October	1st. 10 mos.
Roads	2,565,269	44,237,937
Streets and alleys	2,251,571	29,174,117
Airports	-212,780*	8,308,022
	4,604,060	81,720,076

*Due to contract termination at Bong AFB.

Portland to be site of metals, minerals meeting

THE 13TH ANNUAL Pacific Northwest Metals and Minerals Conference of The American Institute of Mining, Metallurgical and Petroleum Engineers, will be held April 28-30 at the Sheraton Hotel, Portland, Ore. There also will be sessions with American Society of Metals.

Hollis M. Dole, director, Oregon Department of Geology and Mineral Industries, is general chairman.

In this Ontario sand and gravel pit, SKOOPER put loading on fast production basis. 7-foot level-crowd plus full 360° swing eliminate unnecessary track movement — permits continuous digging and loading cycles from a "stand-still" position.

KOEHRING SKOOPER

There's nothing like it—on wheels or Tracks!

SKOOPER combines big bucket capacity of front-end loaders . . . with the fast, smooth swing of an excavator turntable

Now you can do big bucket digging and loading *without* the usual drive-in back-out waste motion of tractor front-end loaders . . . *without* the high track or tire maintenance of a skid-turn operation. Follow Koehring SKOOPER through a typical dig-swing-dump-return cycle . . . check its *economy of motion:*

Powerful action of twin hydraulic rams crowds the 2-yard bucket along a smooth 7-foot level clean-up from "stand-still" position . . . or cuts any angle of bank slope. Next, SKOOPER swings . . . dumps load fast, clean from roll-over bucket . . . then swings back, starts next cycle . . . all *without traveling.* Or . . . at any time, SKOOPER can swing and travel simultaneously. Work with crawlers parallel to cut, or headed into bank. Has 3 types of interchangeable buckets (rock, re-handling, general purpose).

See for yourself

Check this revolutionary SKOOPER in action. Stop-watch its fast cycle time . . . see for yourself how many tons it moves per hour with only 64 H.P.! Also check its low maintenance cost, and unique advantage of excavator-crane convertibility. Call Koehring® distributor, or write.

Mail to: **KOEHRING DIVISION**
3026 W. Concordia, Milwaukee 16, Wis.

Send: ☐ bulletin ☐ specification sheet on SKOOPER

Name .....

Title .....

Company .....

Street .....

City, State .....

RP-K57

KOEHRING HEAVY DUTY

A Division of Koehring Co.

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HINTS & HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

High wall drilling speeds rock excavating

HARD ROCK CONTRACTORS who drill and excavate rock formations often come up with ingenious production ideas that could be useful and valuable to quarry operators. An outstanding bit of ingenuity was developed at the the site of an eastern power house, where an unusual drilling rig was developed to speed drilling of the spillway face.

A pair of drills are mounted on a platform which can be raised and lowered along the face of the rock cliff. The platform is supported on a 30-ft. vertical, tubular framework which is suspended from the end of a long crane boom.

As the pairs of holes are drilled, the platform is lowered into the next position by the hoisting mechanism of the crane. When one drilling pattern has been completed, the crane moves forward and the platform elevated to the top of the high wall ready to repeat the drilling series. The face of the cliff is covered with wire mesh which prevents rock falls, but the drill steel penetrates the screen without difficulty.

Efficient slackline setup pulls 220-tph. of sand, gravel

HERE'S A ONE-MAN pit operation that pulls a healthy 220-tph. of sand and gravel to the plant. The mast at right, and an old crawler tractor on the opposite bank of the pit, hold the ends of the cable for a 2-cu. yd. dragline-type bucket. The operation is controlled by one man, out of sight at left, who operates the power and clutch controls to move the bucket.

Since the bucket dumps directly into a hopper above the tunnel at right, no rehandling by dozer, loader or crane is necessary. Another interesting point about the setup: The old crawler which anchors the far end of the track cable is easily moved simply by starting its power plant. Surely there aren't many pit operations requiring fewer men than this one!

Plant safety hints

WANT TO CUT THE COST of fire and casualty insurance? One good way is to post a consistently better fire safety record. Here are some sound safety tips which should be obvious to most rock products producers. These were discussed at the recent meetings at National Safety Congress in Chicago.

(1) In the shop, don't use gasoline as a solvent—other fluids are less flammable. And when welding an "empty" tank, make sure it doesn't still contain gasoline or kerosene vapors; one man killed himself when such a tank exploded under the heat of his torch.

(2) Your fire hose is a lifeline during fires; handle it intelligently. If you have woven cloth hose, be sure to spread it out for a thorough drying after each use, as firehouses do. It rots easily, and is then useless in fires. A second fire-safety tip: have your soda-acid fire extinguishers given a hydrostatic test yearly to make sure they'll work during a fire.

(3) When spray-painting equipment, do the "obvious" by providing ventilation. And do not permit smoking—solvents used in this operation are highly flammable.

(4) Your explosives magazine can be blown sky-high by enough heat. Yet inspectors often report weeds and grass growing high around dynamite magazines, a perfect spot for a fire when the weeds dry out in the fall!

(5) Greasy clothes and rags are a natural around plant shops, but are a natural fire hazard at the same time! Make sure your crew has clean clothes at all times. A laundry bill is far cheaper than a serious fire.

Note that men, not equipment, are really the cause for all these fire hazards. To emphasize this point, hotels put up signs which read, "This hotel is fireproofed, but you're not. Don't smoke in bed!"

(Continued on page 72)

PROFIT NEWS FOR POWER USERS IN THE

all purpose power line

(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

Now you can enjoy all the benefits of GM Diesel standardization in every type of equipment and still buy the best makes of equipment on the market

GM Diesel engines are offered in more than 1800 applications of power equipment built by over 250 leading manufacturers—wider availability than any other Diesel.

Only by standardizing on GM Diesel will a user get *all* the benefits of engine standardization—for *only* GM Diesel covers the entire power range with only 3 cylinder sizes.

Widest parts interchangeability pays off for operators in lower parts inventory requirements—many parts for a 33 H.P. "Jimmy" Diesel fit a 1650 H.P. "Jimmy."

GM DIESEL

PARTS AND SERVICE WORLDWIDE

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

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4 more producers report:

How to protect profit margins at today's competitive prices

This year, crushed stone prices *dropped* 3½%, while overall construction costs climbed nearly 6% (EN-R price index, 20-city averages). One reason: With over 2200 crushed stone operations in the U.S. — and more and more contractor-producers entering the picture — price competition is keener than ever. Another reason: New cost-cutting machinery is rapidly replacing make-do equipment in the race for lower cost per ton.

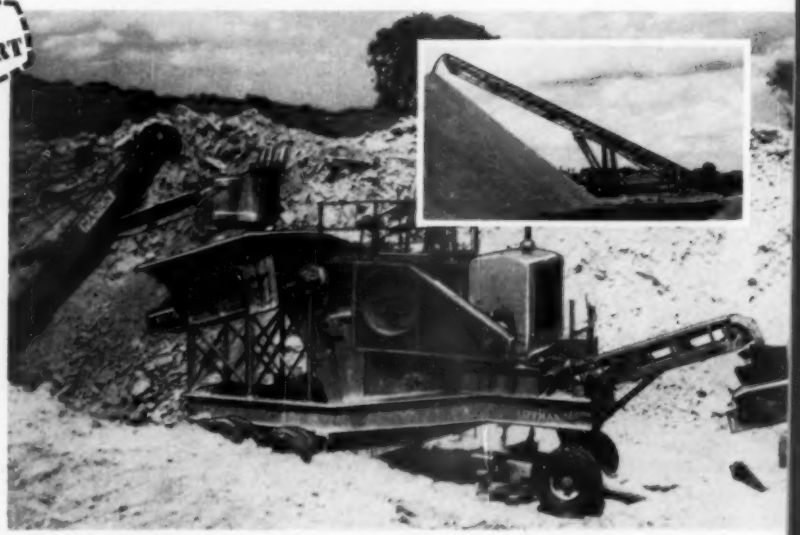
The big question: What can you do to maintain *your* profits in the face of this toughened competition?

More and more of today's successful operators have found the answer in Lippmann crushing equipment, the *best they could buy, the lowest-cost to own.* Here are on-the-scene reports:

LIPPMANN FIELD REPORT

GOES WHERE THE PROFITS ARE

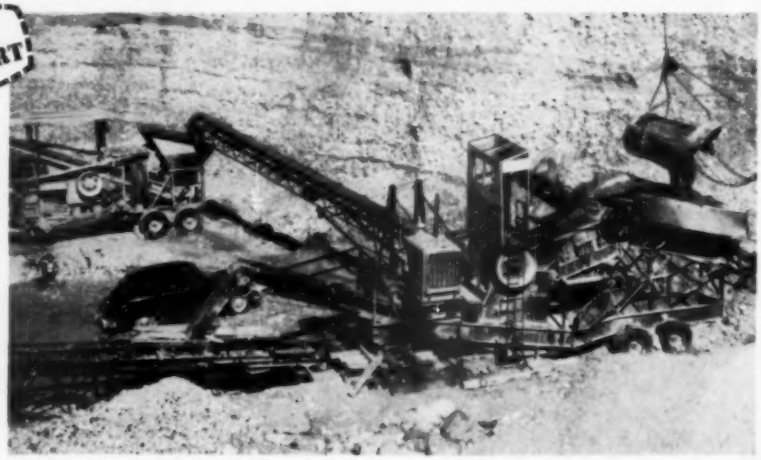
To handle scattered customers profitably, Oregon Stone Quarries works 3 to 4 different locations per season, using 24 x 36 Lippmann portable primary . . . reports 200 t.p.h. output, at 75 to 80% reduction, producing minus 4" stone. At same pit, Lippmann short-wheelbase portable conveyor builds 50 to 100% bigger stockpiles before repositioning is necessary. Based on 4 years profitable and maintenance-free performance, pit foreman J. Steinmetz states, "I don't think there's better portable equipment made."

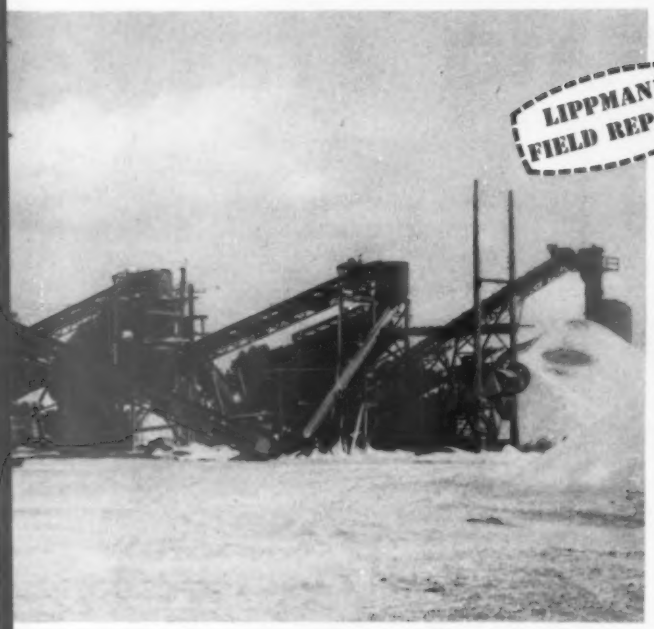


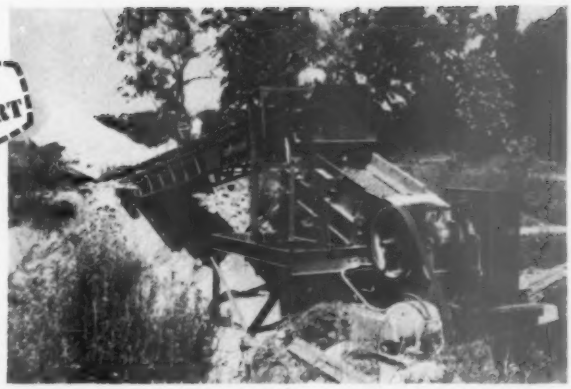
LIPPMANN FIELD REPORT

HANDLES TOUGH MATERIAL PROFITABLY

To solve problem of high-granite-content rock, Road Materials Corp., Illinois, turned to 24 x 36 Grizzly-King portable plant. It was a smart move. Average output: 200 to 250 t.p.h., producing minus 4" at 40% reduction. Owner Arnold Melahn reports, "Performance of this crusher is very good . . . I have yet to see a rock this machine won't pass."





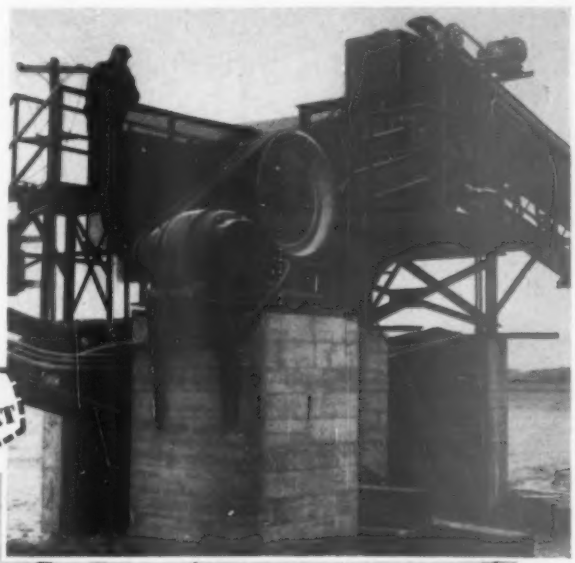


WORKS AROUND THE CLOCK ...NO DOWNTIME

Complete Lippmann plant shown here produces 4 grades of material simultaneously, is push-button controlled by one man. Operating as many as 3 shifts to keep up with demand, plant has had no downtime in 4 years. Using 10 x 24 Rock Ram jaw crusher as a primary, and with discharge opening set down to 1½", the plant produces 130 to 150 tons per hour. On basis of "excellent" all-around performance, owner recently placed repeat-order for Lippmann equipment at another pit.

INCREASES OUTPUT TO 3500 TONS DAILY

To keep pace with market demand, Schuster Construction Co. of Green Bay, Wisconsin, recently opened their second Lippmann-designed-and-equipped crushing plant. Using Lippmann primary and secondary crushers, classifier, screens and conveyors, the plant produces 6 products simultaneously, at average rate of 220 tons per hour. After 27 years experience on various crushing operations, owner Ed Schuster says, "I'll put Lippmann crushers up against any that are made."



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LIPPMANN ENGINEERING WORKS, INC. / Milwaukee 14, Wisconsin

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(Continued from page 68)

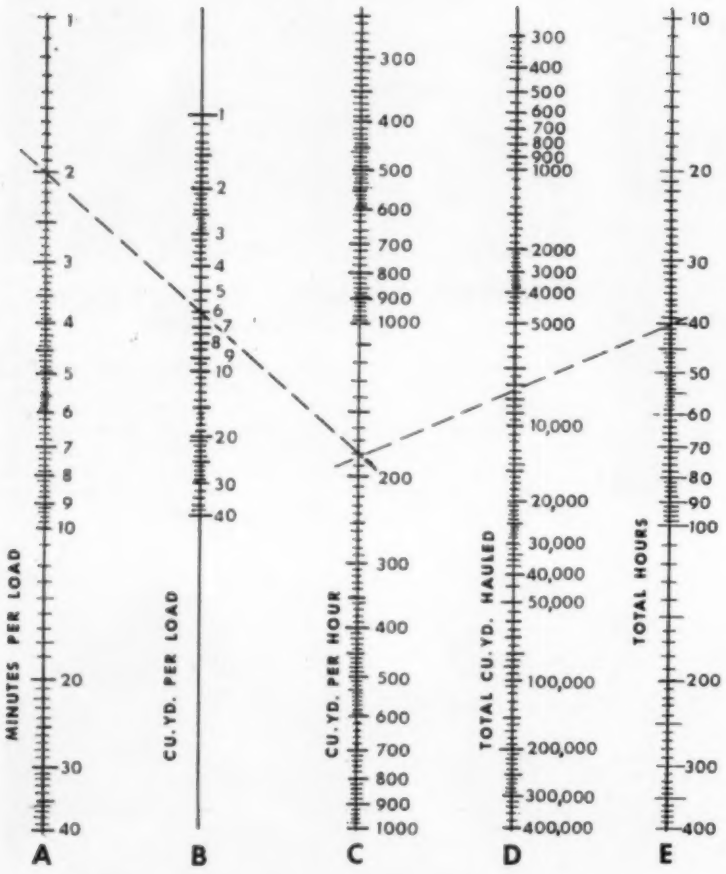


Chart shows how fast your plant is working

HAVE YOU EVER WONDERED just how much material was going through your crushing and screening equipment? Do you count every truckload or do you just guess? This little chart will help you take out a lot of the guesswork and still save the trouble of measuring the input continuously.

For example, if your trucks are putting 6-cu. yd. of material into the primary crusher hopper every 2 min., by referring to the chart this means 180 cu. yd. an hour or 7,200 cu. yd. in 40 hr. This is done by connecting the "2" in col. A with the "6" in col. B, using a ruler or straightedge, and reading the hourly rate in col. C. By connecting the reading in col. C with the "40" in col. E, the figure of 7,200 appears in col. D.

Of course, if you know your truck capacity in tons instead of cu. yd., then the final readings would be in tons. It will take only a few minutes to see how handy this chart can be for you. **W. F. Schaphorst, Newark, N. J.**

Fork lift safety: simple improvements can pay off

SAFETY HINTS are often so small and simple that it is difficult to understand—after the accident—how they could have been overlooked.

But the sharp-eyed foreman of an asbestos producer's shipping department saw a simple and sensible improvement to his department's fork lift trucks, and did something about it. He happened to notice that the pusher arm on the trucks was scraping the operator's shoe each time it moved. Sometimes it caught the heel, sometimes it scraped the toe.

This was all the warning he needed before a small kickplate was welded to the sill of each truck. It is now virtually impossible for the operators feet to stick far enough out of the cab to engage the pusher arm.

Move plant to quarry

ONE WAY OPERATORS of portable crushing plants save money is in moving their setup right up to the shot rock. Thus they completely eliminate the cost of haulage trucks, a not inconsiderable item when you consider both labor cost and truck cost.

This operator gets about 180-tph. capacity, maximum, from his portable operation when using one ¾-cu. yd. shovel, and a top of about 275 tph. when using two ¾-cu. yd. shovels. Since either the shovel or the plant must wait occasionally for haul trucks in the normal operation, such a production level is usually hard to maintain with ¾-cu. yd. shovels.

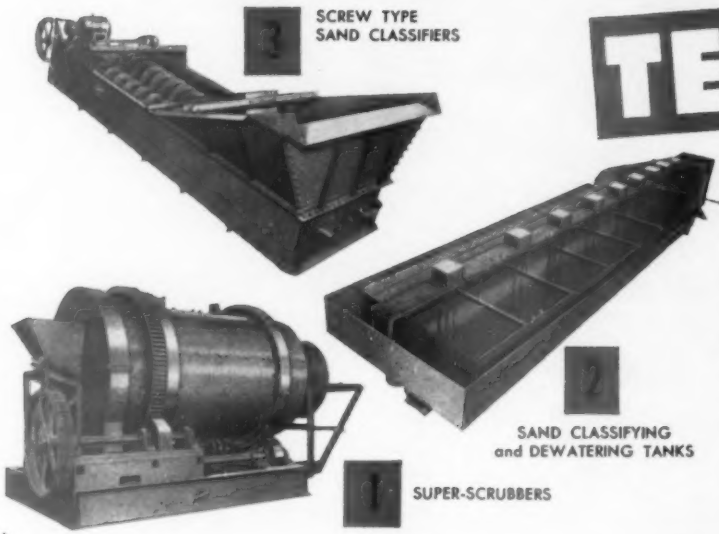
This saving of trucking expense more than makes up for the bother of having to move the two-unit portable operation about once a day, the plant manager reports.

Rear, bottom or side dump?

HERE'S A SWITCH: combine the chassis of a bottom-dump wagon with the body of rear-dump hauler to get a side-dump quarry truck! A producer is doing just that at his new rock quarry, and saved money by adapting the old equipment to it. The dumping

mechanism is also homemade and is operated by the rig's driver to cut labor requirements. The side-dump truck cuts cycle time by eliminating the turn-around necessary for rear dumps, yet has simpler hopper and dumping mechanism than do bottom-dump setups. **END**

MEETS DIFFICULT SPECS



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You can produce clean, properly graded aggregates to meet even *the most exacting specifications*, but it takes the most modern and most efficient machinery. That means *Telsmith* equipment—Super-Scrubbers, Washing Screens, Sand and Gravel Rewashers, Sand Dewatering and Classifying Tanks, Screw Type Sand Classifiers—get Bulletin 292.

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LEFT: Superhighways like the Harbor Freeway—speeding traffic through Los Angeles—have furnished a major market for rock products. How about 1960? *If* enough funds are available . . .

A special report by the editors of *Rock Products*

1960 beckons uncertainly to rock products industry

THE YEAR 1960 may go down as the year of the "Big IF." Almost any look at the economic outlook for 1960 must be preceded by that weaseling word, "If." There are four fundamental "If's" of basic interest to the rock products industries in trying to assess what's ahead in 1960. They are:

- IF the steel strike is settled . . . .
- IF federal funds are made available in realistic amounts for continuation of the interstate highway program . . . .
- IF mortgage money loosens enough to stimulate a growing number of new housing starts . . . .
- IF the demands of labor are checked somewhere short of another cycle of inflation . . . .

If all of these things happen, 1960 could be a good year for the rock industries. If none of them happens, it could be a dismal year. If some do and some don't—well, who knows?

There is surprising optimism among most industrial leaders for 1960, in spite of all the profound question marks facing our economy—the disruption of our budget by the steel strike and the imbalance of international trade in particular.

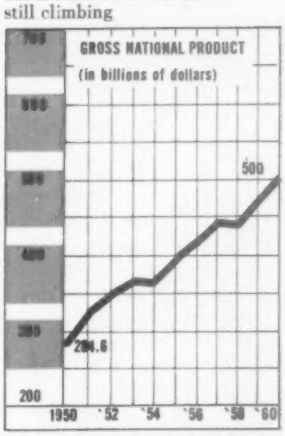
The Business Advisory Council for the Department of Commerce, meeting in November to consider prospects for 1960, came up with a remarkably cheerful report. They look for a high level of production for all of 1960. This is in contrast with a Spring report by the same group, which predicted that the output of goods and services would rise during the first half of 1960, but would slump during the second six months. In its latest report, the Council predicts higher output in 1960 in a broad range of industries, with automobiles, rubber manufacturing and retail trade leading the way. Economists advising the group look for the gross national product to hit a record $500 billion yearly rate by June, 1960, and to continue rising throughout the rest of the year.

What about the big "IF's"?

All of the businessmen and economists who have speculated on the prospects for 1960 seem to start from the point that the steel strike will not be resumed when the injunction period has passed. A resumption of the strike would effectively torpedo many of the industries in which large gains are expected for 1960—notably automotive and rubber manufacturing. It also would reduce consumer purchasing power to an almost crippling level. Thus, in looking at 1960, it is almost necessary to start from the assumption that the steel industry will be in full production.

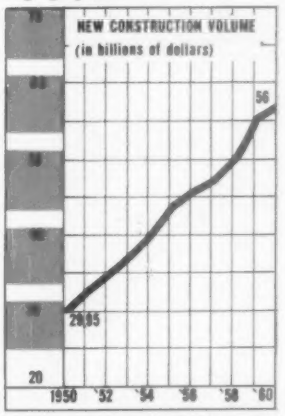
The highway program is something else again. The skyrocketing costs of building the interstate system are not going to get any better. Neither are the tempers of Congressmen who will be faced in an election year with

GROSS NATIONAL PRODUCT: still climbing



Source: Statistical Abstract of the U. S., ROCK PRODUCTS *estimates*

NEW CONSTRUCTION VOLUME: edging upward



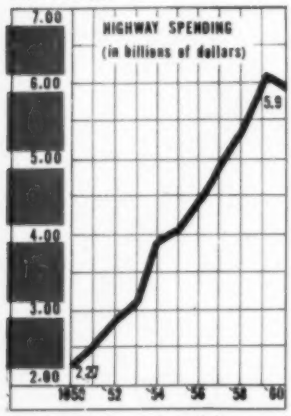
Source: Construction Volume and Costs; Construction Review, and ROCK PRODUCTS *estimates*

Please turn page

1960 BECKONS UNCERTAINLY . . .

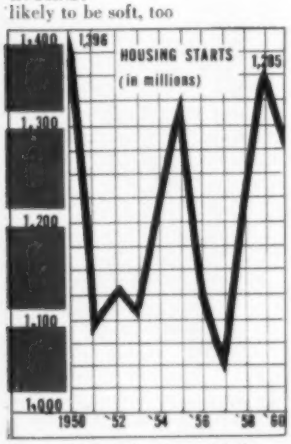
continued from page 75

HIGHWAY SPENDING:
down a little



Source: Construction Volume and Costs; Construction Review, and ROCK PRODUCTS *estimates*

HOUSING:
likely to be soft, too



Source: U. S. Department of Labor

the recurring necessity of pouring more and more money into this program.

That it will continue is unquestioned. But how fast and how far is open to question. It also has resolved itself, more than ever, into a local program where some geographic sections of the rock industries stand to profit considerably from highway building, and some not at all. The principal change in the past two years is in the over-all cloak of sanctity that covered the highway program. It is no longer regarded—like motherhood and Christmas—as an undivided blessing. And to the extent that this is true, the highway market will become precarious in some parts of the country.

Housing may very likely be soft, too. Melvin H. Baker, chairman of the National Gypsum Co., said recently: "Mortgage money is becoming tight, but we do not expect any severe cut-back in total new construction next year. There will be some reduction in home starts, but there will still be other types of building, including industrial plants and apartment houses, which will be up. On the whole, we expect that the total amount of money spent for construction the next 12 months will be about equal to what was spent in the past 12 months."

In spite of the question marks—some of them quite alarming— optimism is running high throughout most of the rock industries.

For example, The Flintkote Co., which last year acquired a number of large rock industry holdings, expects the gains in sales and earnings it made in 1959 to continue through 1960. From the widespread modernization and expansion going on in rock products industries all over the nation—discussed in detail in the pages to follow—it would appear that most of our producers share these expectations.

Whether this optimism is justified or not remains to be seen. Probably the most realistic summary of the portion of the economy relating to the rock industries was provided ROCK PRODUCTS by one of the largest manufacturers of rock industry equipment. It said:

"As we have framed up our understanding of the construction forecast, apparently housing is going to be down on the order of 10 to 15 percent, but will be offset by increases in other construction areas, with the expectation that the total for the year will be about the same as 1959, or maybe not quite as good. As part of the uptrend in capital expenditures, industrial construction is due to rise and also commercial construction. The close budgeting of the highway program suggests that highway construction may not be any greater in 1960 than it was in 1959. There will be a general economic atmosphere of prosperity as we expect capital expenditure on the part of manufacturing companies to go up some 10 or 15 percent. This will lend an aura of prosperity through the entire economy, even though construction, itself, may not rise over 1959."

SUMMING UP: 1960 is likely to be an uneasy economic year, full of doubts and qualifications. In the general economy, these would depend on the equitable solution of the steel strike, the establishment of a better balance of foreign trade and the ability to bypass Federal deficit financing. In the rock products industry, the major question marks resolve around Federal support for the highway program, the difficulty of financing housing construction and the inflationary effects of the demands of labor.

Optimistic expenditures in the rock products industry for modernization and growing capacity are based on increasing commercial and industrial construction to offset housing losses, a continuation of the highway program at a boom level and general economic prosperity. There is still some doubt whether or not these hopes are entirely justified in 1960—the year of the big "IF's."

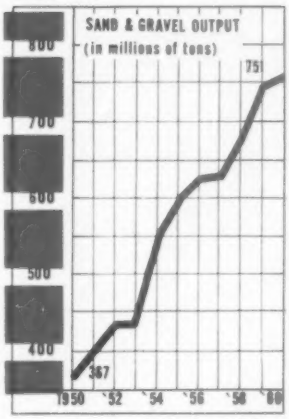
Sand and gravel producers brace for possible decline

A LEVELING OFF IS DUE in the sand and gravel industry in 1960. Many operators will be pleased if it is just a leveling off and not a decline. As in the past two years, this will depend to a large degree on the highway market.

Almost half of the operators who returned answers in the ROCK PRODUCTS survey named highways at the top of their list of markets; and, interestingly enough, almost exactly half of these expect the highway market to increase in 1960 and the other half expect it to decrease. This illustrates the regional nature and the confusion in the sand and gravel outlook for 1960.

There actually will be a decrease in the production in 1960 of the sand and gravel operators reporting in the survey. Production figures reported show a decline of almost 5 percent in 1960 from the previous year. At the same time, the percent of capacity used is expected to drop from 64 percent in 1959 to 60 percent in 1960.

SAND & GRAVEL OUTPUT
levels off



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

Some of the production declines are drastic. A Michigan producer expects to drop from 2,300,000 to 1,100,000 tons; a large Ohio producer, from 14.5 million tons to 14 million. Most of the others indicate that they expect only to hold their own or experience a slight decrease. Less than 20 percent expect to produce more material in 1960 than in 1959—and most of these anticipated increases are slight.

Nor do these same operators see large production increases in the year immediately ahead. They expect 1961 to hold just about even with 1960, then look for a 10 percent increase in 1962, which will level off again in 1963.

Remarkably enough, in spite of this rather gloomy outlook, almost 20 percent of the companies reporting expect to build new plant facilities in the next three years, and about the same number intend to modernize existing plants extensively.

Efficiency in sand and gravel plants continues to increase much too slowly. Considerably fewer than half expect to increase their production efficiency next year—a strange anomaly in an era of growing mechanization and automation.

Plants reporting in the survey show a wide variation in the tons of output per production man hour—ranging from a low of 4.4 to a high of 17.8. Some of the variation undoubtedly is due to the fact that there is no standard formula in the industry for reporting productivity rates.

About 22 percent of the operators reported increasing prices in 1959, ranging from 2 to 20 percent, with the average about 8 percent. Almost half of this group expect to raise prices in 1960; prices are expected to go up an average of 6 percent over the previous year.

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SAND AND GRAVEL PRODUCERS . . .

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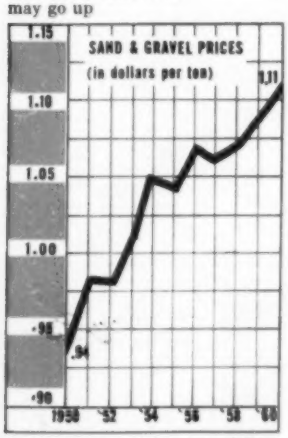
SAND & GRAVEL PRICES
may go up



Source: Bureau of Mines and ROCK PRODUCTS *estimates*

Among technical advances in the industry, automation was mentioned most frequently, both for the year past and as the hope of the future. Front-end loaders also received strong support as the most important among current technical advances. A strong need was indicated for better crushing and classifying equipment, heavy media separation, test controls, beneficiation equipment for upgrading marginal deposits and larger material handling equipment.

Among the problems that sand and gravel operators say they are anxious to lick are: Improved wearing quality of alloy steels, better sand recovery and elimination of contaminating materials. Several operators also stressed the need for a broader program of research to find new uses for sand and gravel.

As mentioned earlier, highways turned up as the most volatile market among the sand and gravel operators. Half expect it to increase, half to decrease. There is also a general feeling that industrial construction will come back strong in 1960, taking up much of the slack lost in other markets. Increases are also expected in road maintenance, government military and missile projects and bridges. Four markets were singled out repeatedly for an expected decline. In addition to highways, decreases are expected in home building, airports and railroad ballast.

As for problems within the sand and gravel industry, three stood out above all others in the returns: labor, competition, and the increased cost (in addition to labor) of doing business. Close behind came the depletion of nearby deposits and the need for acquiring suitable reserves, and zoning.

"If the cost of labor," said one operator, "continues to increase at a greater rate than production, it's going to cost us right out of business."

Many of the operators were similarly emphatic about growing competition within the sand and gravel industry. Such phrases as "over crowded," "small non-union plants" and "marginal producers" turned up again and again.

One operator said: "I'm having a tough time competing with portable plants operated by contractors." (See ROCK PRODUCTS, March, 1959, p. 76.)

Among the increased costs of doing business, three were singled out for special mention: painfully high financing rates; zooming costs of equipment, climbing transportation and shipping rates.

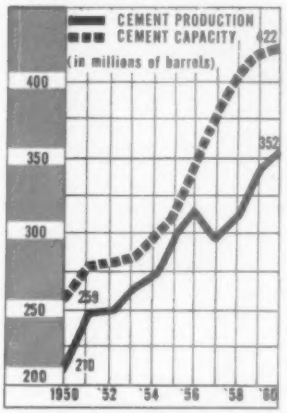
SUMMING UP: 1960 will be an uneasy year for many sand and gravel operators. Increased competition—attracted by the last few boom years—will clutter up a virtually stand-pat market. Declining housing starts will probably be more than offset by stronger commercial and industrial building, but highways remain a large question mark.

Portland cement—leveling off after a decade of rapid growth

THE SKYROCKETING GROWTH that has characterized the portland cement industry for the past decade will slow its pace considerably in 1960. In spite of this fact, the industry expects a better year than in 1959, and will certainly get it unless something drastic happens to the federal highway program. Cement production which will probably jump about 30 million bbl. in 1959 over 1958 will show, industry-wide, only a modest increase of 10 million bbl. or so in 1960.

This prediction is borne out by the ROCK PRODUCTS survey returns which cover about 30 percent of the industry capacity. These companies expect to increase their production in 1960 by about 2 percent. This same slowed-down rate of growth is expected to continue at about the same pace through the following three years. At the same time, the industry expects to use more of its existing capacity. Respondent companies reported using 83 percent of effective capacity in 1959; they hope to increase this to 86 percent in 1960.

CEMENT PRODUCTION:
a modest increase



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

More than any other of the other rock industries, cement has been caught up in the wheels of technological progress. One survey respondent said:

"Our new plant has been in operation two years, and the technical advances in comparison to existing plants are too numerous to mention."

This same feeling is reflected among the operators of many other new and thoroughly modernized plants. Almost half the survey respondents pointed to automation as the most important current technical advance in the industry, and about the same number look to it as the brightest hope of the future.

This hope, however, is tied in closely with some of the major problems named by cement manufacturers: money, labor and more competition.

Growing competition, both from domestic producers and foreign cement manufacturers, has necessitated increased efficiency of operation among American cement manufacturers. This, in turn, has meant increased automation. As a result, many small companies have been caught in the squeeze of inability to compete effectively with worn out plants and inability to obtain favorable financing to complete needed modernization. Throughout this cycle, the increasing demands by labor have made further mechanization almost a necessity in order to hold costs down to competitive levels.

"We've got to find money to modernize and expand," said one cement producer, "and at the same time we've got to figure out how to get a day's work for a day's pay from our workers."

One out of every five manufacturers reporting in the survey expect to build a new plant in the next two years, expending from $6 to $14 million each. Some 25 percent expect to modernize existing facilities during the same period.

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PORTLAND CEMENT—LEVELING OFF . . .

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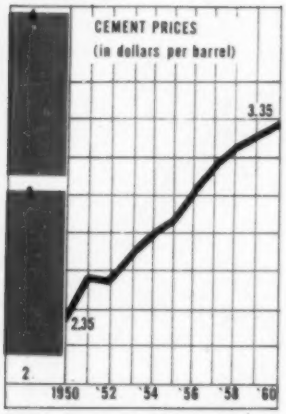
CEMENT PRICES: continued rise



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

An overwhelming majority expect to increase their production efficiency next year. The barrels per production man hour reported in the survey varied from 5 to 6.5; manufacturers expected to improve these limits to 5.9 and 7.2 in 1960.

Slightly under 35 percent increased their prices in 1959, and about the same proportion expect to raise prices in 1960. In all cases, price raises were modest, but the increase in 1960 is expected to be sharper, averaging out at about 4 percent among those who plan to raise prices.

In addition to automation, some of the technological advances mentioned frequently by cement manufacturers included: fuel economizers; more accurate proportioning; larger mill units; improved shipping through stepped-end bags, disposable pallets and greater truck payloads; better dry stage blending, and more efficient dust collection.

Disenchantment has set in among cement manufacturers over the highway market. None expect the highway market to increase in 1960, while almost half of those responding to the survey expect it to decrease. Sizeable decreases are also expected in private housing. Cement manufacturers hope to compensate for these slipping markets, however, through growth in two types of construction: commercial and industrial buildings; dams and other public works, including airfields. More and more cement producers are looking to precast concrete as the prime hope for market expansion.

Said one: "The acceptance of prestressed concrete should result in a considerable increase in its use, thus bringing about a higher consumption of cement from all manufacturers."

No single problem stood out among the cement producers. Rather, a half-dozen received almost equal attention. These were: rising costs, particularly in labor, fuel and supplies, leading to an increasingly acute cost-price squeeze; tight money for financing needed modernization; overproduction and overcapacity; possible reduction of percentage depletion and uncertainty as to its status; increased competition, from abroad and from other building material producers entering the portland cement field.

SUMMING UP: The cement industry in 1960 is hopefully expecting commercial and industrial building to pick up the slack in declining housing and highway markets. Such a hope may turn out to be too optimistic—depending to a large extent on how well and how fast the highway program moves along. In the meantime, foreign cement and increasing domestic production point to a rugged competitive period ahead for the entire cement industry.

Crushed stone—still tied to an up-and-down road program

CAUTION SEEMS TO BE THE WATCHWORD in the crushed stone industry in 1960. None of the crushed stone operators reporting in the ROCK PRODUCTS survey expects to build new plants in the next two years, and only about 12 percent have extensive plant modernization planned.

This same feeling is represented in production figures. Those plants reporting show an expected increase of less than 5 percent in 1960 production over the previous year. And these same producers are not expecting the booming growth of the past decade to appear again in the next few years. Almost all of them predict a leveling off of production in the period from 1960 to 1963. During the same period, the percent of capacity used is expected to hold steady at the present average of about 64 percent.

Less than 6 percent of crushed stone operators raised their prices in 1959, but about 30 percent propose to raise prices in 1960—up an average of about 5 percent.

The reasons for this apparent halt of the rapid growth of the crushed stone industry were stated emphatically on the survey returns. Crushed stone operators listed five major problems being faced by the industry:

- Rapidly rising costs—particularly in transportation—which are putting operators in a cost-price straitjacket . . . .
- Growing competition—some of it cut-throat—marked by more portable plants, synthetic aggregates, shirttail producers, price cutting and the growing use of inferior aggregates close to the job sites . . . .
- Lack of efficiency, combined with increased demands from labor . . .
- Decrease in federal spending for highway construction . . . .
- Overproduction and excess capacity in existing plants . . . .

Two rather plaintive comments from producers point up the attitude of many of the survey respondents who are faced with these same problems.

One said: "Equipment dealers are selling to unqualified people under too easy financing arrangements. This simply aggravates what is already a bad case of overproduction in our area."

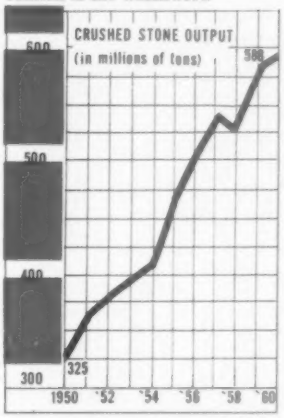
Another pointed out: "We expect a decrease in over-all markets in 1960 due to the slowdown of the federal road program."

In these two comments can be found the focus of the situation in which the crushed stone industry finds itself today: a slowdown in a major market combined with a step-up in competition.

Even so, stone producers expect expanding markets in other fields to give them a lift—notably from flux stone, agricultural limestone and industrial building. More than half of the producers reporting in the survey also expect some increase in highway construction in their marketing areas.

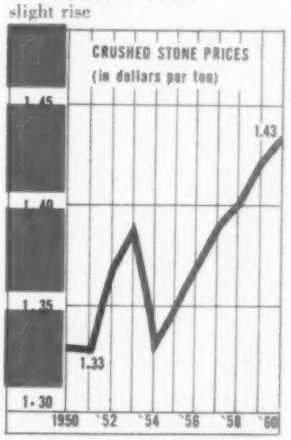
Production efficiency continues to increase. Tons per man hour for 1958 averaged 7.8; this was increased to 8.4 in 1959, and three out of five of the producers reporting expect to better their efficiency in 1960.

CRUSHED STONE OUTPUT: caution is the watchword



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

CRUSHED STONE PRICES: slight rise



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

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CRUSHED STONE—STILL TIED . . .

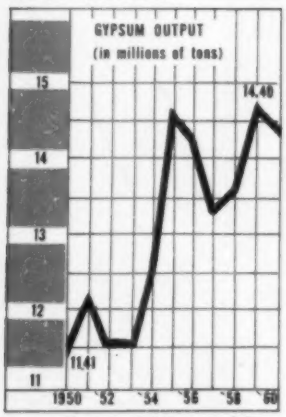
continued from page 81

Almost all of the technical improvements mentioned as particularly helpful in present production involved either blasting or drilling. The use of ammonium nitrate for blasting was mentioned most often, followed closely by larger impact crushers and better small-hole drilling equipment. Producers are hopeful that future technological improvements will center around increased mechanization of freight car loading, stacking and other materials handling, plus improved and more economical explosives.

SUMMING UP: The major market for crushed stone—highways—is in a considerable state of flux. This fact, mixed with growing rugged competition, has halted the precipitate growth of the crushed stone industry and leveled off production somewhat. If the highway program proceeds satisfactorily, 1960 could be a very good year. But whatever happens to highways, 1960 is sure to be a competitive year in crushed stone.

Gypsum—prosperity in spite of housing

GYPSUM OUTPUT
should hold its own



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

THE GYPSUM INDUSTRY is related almost as closely to housing as is the lime industry to steel. Consequently, a major decline in housing starts in 1960 could hurt the gypsum manufacturers.

Meager survey returns from the gypsum industry indicate that producers are not expecting this to happen. The companies reporting show an expected increase of about 10 percent in production in 1960 over 1959.

Two factors will act to soften the unhappy results of a home building decline for the gypsum industry. First is the growing popularity of gypsum wallboard which is taking a larger proportionate share of the market each year. Second is the growing use of this material in commercial and industrial construction which is expected to increase in volume in 1960.

The gypsum plants reporting held prices steady in 1959, but expect to increase them in 1960. They will continue to operate at about 80 percent of capacity as they expand production at the rate of about 8 percent a year through 1963.

SUMMING UP: A housing decline would hurt gypsum, but not seriously. If housing is strong, gypsum will boom; if it isn't, gypsum should at least hold its own.

Lime—as steel goes, so goes lime

THE LIME INDUSTRY bounced back resoundingly in 1959 from a very rough year in 1958. But the reason for the resurgence may cause pain to the industry in 1960. The future of lime in 1960 hinges largely on the outcome of the present unresolved (at this writing) steel situation.

The first half of 1959 was the highest lime shipment period from a tonnage standpoint in the industry's history—about 5 million tons. Then came the steel strike, and lime tonnage declined about 25 to 30 percent. Thus the prosperity of the lime industry in 1960 is tied almost directly to steel production since, under current conditions, the steel industry consumes about 35 percent of burned lime products.

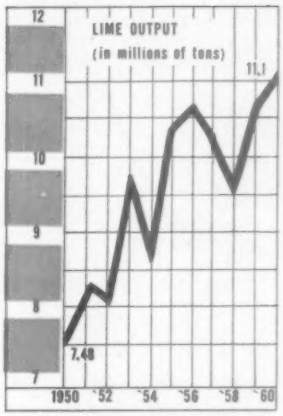
There is a sizeable increase in lime production capacity currently announced or underway by ten companies. Much of this new capacity will be available sometime during 1960. However, the combined increase in capacity appears to be well ahead of the anticipated increase in lime demand. As a result, sales competition will probably be intensified. Lime plants reporting in the ROCK PRODUCTS survey show an average production of 76 percent of capacity in 1959—a figure they expect to hold steady in 1960. Prices which were generally rather stable in 1959 are expected to go up about 5 percent by three-fourths of the lime companies reporting.

Most of the new lime-producing units are achieving steadily higher capacities per sq. ft. of kiln area at greater fuel efficiencies with lower unit costs—as a result of rotary kilns with improved preheaters, coolers and quadrants and higher capacity vertical kilns with more efficient heat recovery. There is also increasing interest in underground mining of limestone from both a cost and quality standpoint.

One of the major problems for lime companies continues to be the relatively slow amortization of capital equipment costs and, as a result, low return on investment. This is due to the tremendously increased equipment and plant construction costs, coupled with the need for steadily increased mechanization. Other problems mentioned by lime producers included increased competition from dry wall construction and other types of inert materials and the increasing cost of labor.

SUMMING UP: As steel goes, so goes lime. Normal steel production in 1960 would probably mean a record year for the lime industry.

LIME OUTPUT:
on the rise



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

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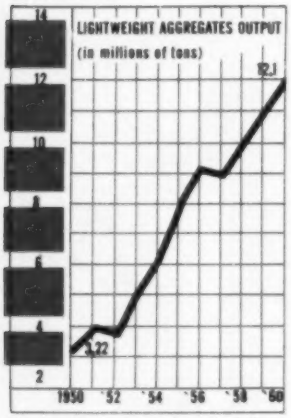
ROCK PRODUCTS FORECAST

Lightweight aggregates—still finding new markets

LIGHTWEIGHT AGGREGATES OUTPUT: certain to rise



Source: Bureau of Mines, and ROCK PRODUCTS *estimates*

THE LIGHTWEIGHT AGGREGATES INDUSTRY—which has come along so fast in the last few years—is beginning to meet up with some of the hard facts of rugged competition. Although the nature of the industry may change somewhat as a result, the outlook for the industry as a whole is continued growth and prosperity.

Many of the earmarks of a new industry are beginning to rub off. Efficiency which was low is picking up steadily. The average of 1.36 tons per production man-hour among survey respondents in 1958 grew to 1.75 in 1959 and is expected to rise to about 2 in 1960. Use of existing capacity is also increasing—from 58 percent in 1958 to about 75 in 1959 and even higher in 1960.

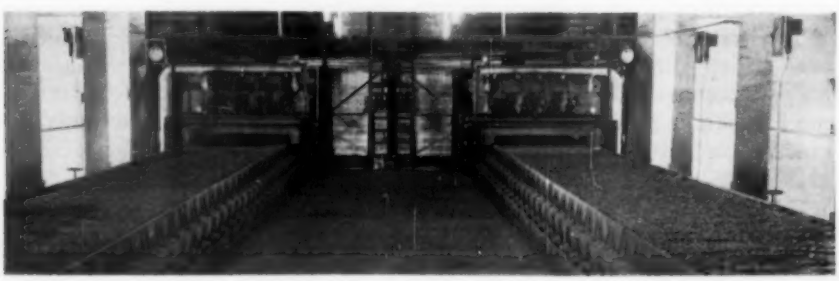
Lightweight aggregate producers expect their greatest growth in markets next year to come from the exciting field of precast structural concrete. Development of markets for refractory and asphaltic concrete aggregates is also expected to result in a growing demand for the product—and more than offset any losses due to a decline in housing starts.

Problems of the industry revolve mainly around competition—both from within and without. The comments from two producers in their survey replies illustrate both facets of this problem. One said: "Competition is growing and strengthening from plastics, steel and aluminum for partitions, prefabricated schools and similar projects where much of our material is sold."

The other commented: "We're being invaded by huge companies with unlimited capital and monopolistic intent."

However the latter problem is resolved, the first problem—competition from outside—will probably slow but certainly not stop the steady growth in the lightweight aggregate industry.

SUMMING UP: Still a relatively new product with exciting new possibilities not yet explored. Certain to continue growing in 1960.



Trade associations and suppliers see cautious prosperity

ON THE PRECEDING PAGES, we've heard from the producers in each of the major rock industries. Now, what of the other groups closely involved with these same industries—the labor unions, trade associations and equipment suppliers? A number of these people supplied ROCK PRODUCTS with a clear and detailed picture of what they see ahead for 1960. Only the trade unions failed to supply any information.

Let's consider first the comments sent along by heads of several of the trade associations serving the rock industries:

"Of all the years you've asked us to predict the business outlook for the rock products industry, this is the time you'll probably get a wider range of opinion than ever before in history."

Anonymous supplier

Lime: Robert S. Boynton, general manager of the National Lime Association, reports: "Assuming the strike is settled by the beginning of 1960, lime and dead burnt dolomite should be consumed at a furious (probably unprecedented) pace during the first 3 to 4 months of 1960 in order to replenish current steel inventories that are presently nil. This factor, together with some technological changes in the steel industry that are favorable to lime, should make 1960 a banner year for lime consumption in steel in spite of a declining demand for lime in the last six months. Further anticipated increases for lime in road stabilization should balance out losses for lime in the water and paper field. Building and agricultural lime is expected to remain the same. Net: 1960 should be near a record year of 9.3 to 9.5 million tons, unless a general business recession is experienced in the last half which appears unlikely."

Portland cement: G. Donald Kennedy, president of the Portland Cement Association, reports: "Shipments of portland cement in the United States during the first three quarters of 1959 totaled 256,368,930 bbl.—a 13.7 percent increase over the 225,506,895 bbl. shipped in the same period of 1958.

"Concrete paving awards for streets and civilian airports showed significant gains in the first nine months of 1959, as compared with the same period of 1958. Although highway awards were running behind the 1958 level, passage of new federal-aid highway legislation late in September was expected to result in the rescheduling of many cancelled lettings by the end of the year. This could partially offset the decline that began in midsummer.

"Civil airport awards for concrete pavement increased 18 percent in 1959. Airport construction will be given an additional boost in 1960 as more and more airlines turn to jet aircraft which require larger and stronger runway, apron and taxiway pavement. The Federal Aviation Agency has estimated that civil airports must be improved to the extent of $1,285 billion by the end of 1962. Much of this money will be used for pavement construction.

"After a 1958 increase of 78 percent over the previous year, soil-cement construction volume continued to rise during 1959. By the end of the third quarter, contract awards exceeded the 1958 level by 11 percent. This record

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TRADE ASSOCIATIONS & SUPPLIERS . . .

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reflects the growing acceptance of soil-cement for pavement base and, more recently, for subbase and shoulder construction on primary and interstate system highways.

"The importance of urban renewal as a market for portland cement continues to grow. By the beginning of 1959, federal-aid for urban renewal and redevelopment had been approved for 648 projects in 42 states. Several large, new projects are expected to get underway in 1960.

"Most construction industry forecasters agree that 1960 may be another record year for work put in place. Indications are that industrial, school, hospital and public utility construction will show increases over 1959. Residential construction should continue near the high level of 1959; however, relatively high interest rates and the scarcity of mortgage money may adversely affect this market.

"The highway program encountered financial difficulties during the last half of 1959, but the carry-over of contracts previously awarded indicates that highway construction will continue at a high level in 1960."

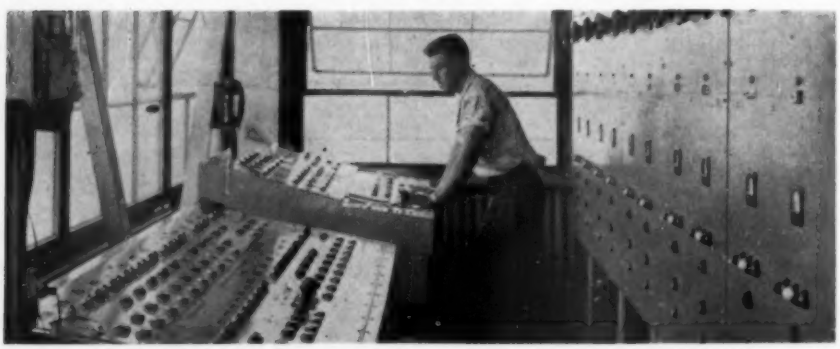
Slag: From E. W. Bauman, managing director of the National Slag Association, comes this report: "If the labor situation in the steel industry does not flair up again to curtail our source of supply for raw slag, we should have another 35-million-ton year, or probably better. The production efficiency of the slag industry from use of special processing equipment and operational techniques has improved steadily from the past years, so that, today, with practically the same manpower as formerly, a much higher rate, expressed in tons per man hour, is being obtained.

"Much of this improvement can be traced to the National Slag Association plant Operators' Committee, which meets regularly to discuss production problems: maintenance, plant safety and specification requirements.

"At the moment, I cannot foresee any particular problems of a legislative or labor-relations nature that should concern us more than under normal circumstances. Generally speaking, we are sure the optimism expressed by several industry economists that 1960 should be a good year is well founded."

A number of major rock industry suppliers also provided ROCK PRODUCTS with the thinking of their market analysts for 1960. Below are three of these comments which sum up rather well the range of thinking found among equipment manufacturers who replied to the survey.

Kenneth Lindsay, executive vice-president of the Iowa Manufacturing



Co., points out: "Projected output by the total industry should probably be 10 to 20 percent less if federal aid money is that much less—as it now looks to be.

"The major problems to be faced, of course, are getting money for the highway program and enough steel early in 1960 to complete some of the work under contract.

"There will be many new developments in equipment. Production efficiency has increased remarkably, even though the general run of specifications have been a lot tougher (as they should be). The specifications are getting tighter and tighter, which means an improved product—a better end-product—with the consumer getting more for his money whether it's a concrete dam or a blacktop pavement or the plaster on the wall in the barroom."

Here's how Arthur J. Frank, manager of commercial development for the Chain Belt Co., sees the picture:

"In our experience, when there has been a sharp increase—like that in 1959—the result has been what we refer to as an 'equipment buying year,' during which contractors and rock products producers find themselves needing more capacity and, thus, replacing and upgrading their older equipment. Then when a levelling comes, they find they may have adequate capacity; buying of equipment tends to level or even decrease as the emphasis shifts from expansion to replacement and, perhaps more importantly, the elimination of obsolescence through upgrading.

"With this sort of an analysis basic to 1960 as we see it, we are inclined to expect the equipment part of it will be about the same as 1959 or somewhat higher. There continues, of course, to be great pressure toward improving efficiencies, and we see conveyorization in an automated way as coming to be more important. In other words, the more the rock products industry can automate its processes, the better costs will become."

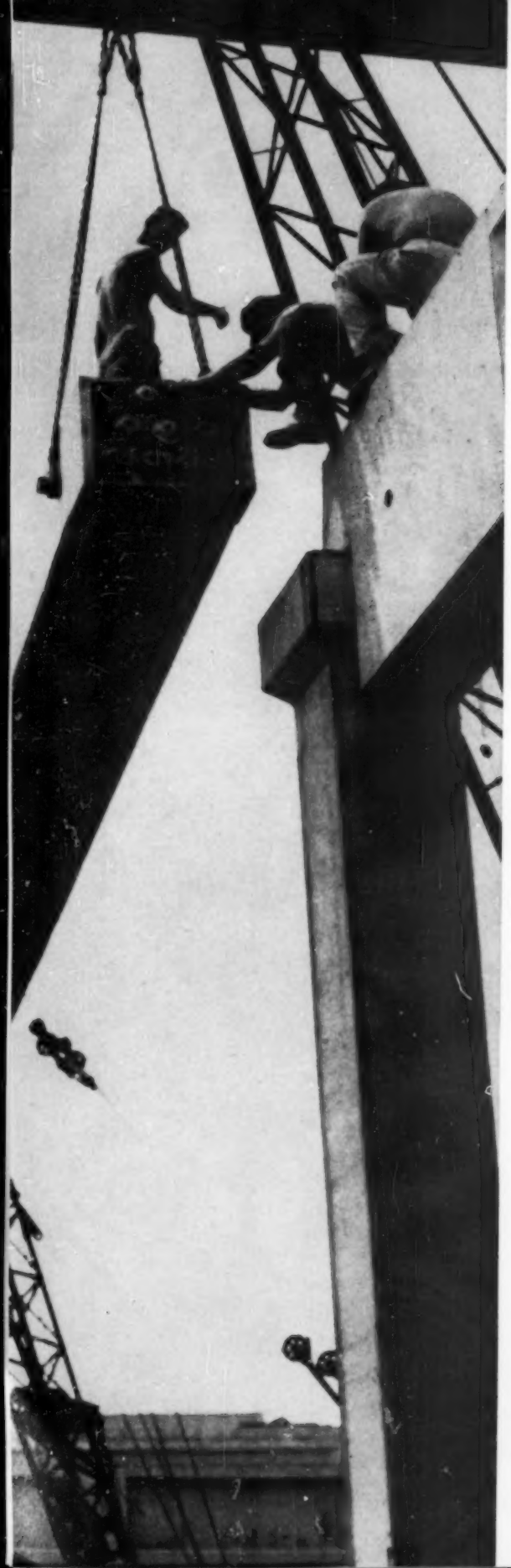
And, finally, Kenneth W. Connors, manager of advertising and public relations for Leeds and Northrup, reports:

"Briefly, we are expecting a continuation of the present trend toward the completely integrated plant. Surveys would seem to indicate that modernization programs will not only continue throughout 1960, but probably will become intensified.

"Although computer controls probably will play an important role in future completely instrumented plants, such a development must be preceded by much study of the interrelated effects of all variables on the final product. A step in this direction being contemplated by a number of plants is the installation of data loggers in order that accurate information may be gathered for study and analysis. Progress also is being made in the use of automatic blending and mixing systems for raw materials. Kiln shell temperature measurements are proving practical in locating hot spots. The control of combustion in the kiln by analyzing exit gas oxygen is another development of value."

SUMMING UP: Probably the best way to wrap-up this rock industry forecast for 1960 is to quote a supplier who in one sentence put his finger on the shape of things to come. Said this prophet: "Of all the years you've asked us to predict the business outlook for the rock products industry, this is the time you'll probably get a wider range of opinion than ever before in history."

And that's the way it was for 1960—the year of the big "IF"s." **END**



Construction keeps climbing—

1960 no exception

by Peter B. B. Andrews

A RECORD-SHATTERING, $56-billion year is seen for new construction in 1960. Alongside this fact, and perhaps of considerably more importance to the rock products producer, is the outlook for a $3-billion-plus price tag on the output of the rock products industries in the same 12 months. This year will continue the trend of record-setting years, begun in 1958 and continued in 1959. Optimism in this area of business is felt despite some pessimism on general business prospects that arises from tight money, "peace scares" and increasing world-wide competition.

These facts emerge from the over-all consensus of the 311 analysists on the Future Sales Ratings Board in its projection of activity in the construction industry and in sales of new plant, machinery and supplies to the rock products industries. The board comprises economists, statisticians, marketing experts in government and private industry, and reportedly is the most experienced economic-predicting panel on the nation's industries.

Should the board's predicted 1960 construction

Tied to estimated $56-billion spending for new construction is the favorable outlook for the rock products industries

outlay of $56 billion prove correct, it would exceed 1959's record, estimated at $54.725 billion, by two percent. Last year's outlay, in turn, topped 1958's $49.109 billion by more than 11 percent.

An impressive advance has been made by the rock products industries. The field has doubled in size in the last 10 years. Sales in 1960, that should substantially exceed $3 billion, promise an excellent sales potential in other areas—the entire range of plant materials, machinery and equipment to be used by the rock products industries.

Estimated sales by firms providing rock products industries with machinery, new plant materials and supplies are detailed in an accompanying table. These are definitely attainable, says the board, unless the manufacturers and distributors of this equipment develop a defeatist attitude in sales-development programs for 1960. This is most unlikely.

So the board, in view of these sales potentials and its expectation that manufacturers will intensify their promitional programs to capitalize on them, has assigned the future sales rating of five stars to this equipment and supply industry for 1960. This is the highest rating an industry can get, signifying the "best relative outlook."

Also receiving the five-star rating is the rock products industry proper, embracing the products of the nonmetallic mining industry. These include crushed stone, sand and gravel, limestone, gypsum, refractory materials, natural abrasives other than sand, chemical minerals and many other nonmetallic minerals, including mica, native asphalt, pumice and talc.

These ratings represent the common-denominator determinations of the Future Sales Ratings Board. As market analyst for ROCK PRODUCTS, I surveyed the views of the board. Exclusive in this magazine are its specific projections with respect to potential sales increases or decreases in capital equipment and supplies used by the nonmetallic mining industry.

The table presents a consensus of the board's estimates. It shows a $332.6-million total of all projected spending by the rock products industries in 1960, compared to $314.2 million in 1959, a gain of 5.9 percent. This expands the buying potentials of these industries to the highest levels ever attained—one of the strongest situations among the nation's basic industries.

Foregoing projections over the next 12 months in plant and equipment assume logical advertising and selling promotion increases by manufacturers and distributors in this industry. But the board feels that more sales can be made if promotional programs are advanced sufficiently to take full advantage of the opportunities. Conversely, the board feels that weak promotional programs might result in little or no gain in equipment sales.

Please turn to page 92

PROJECTED SPENDING
ESTIMATED FOR ROCK PRODUCTS INDUSTRIES
IN 1959 AND 1960 (in millions of dollars)

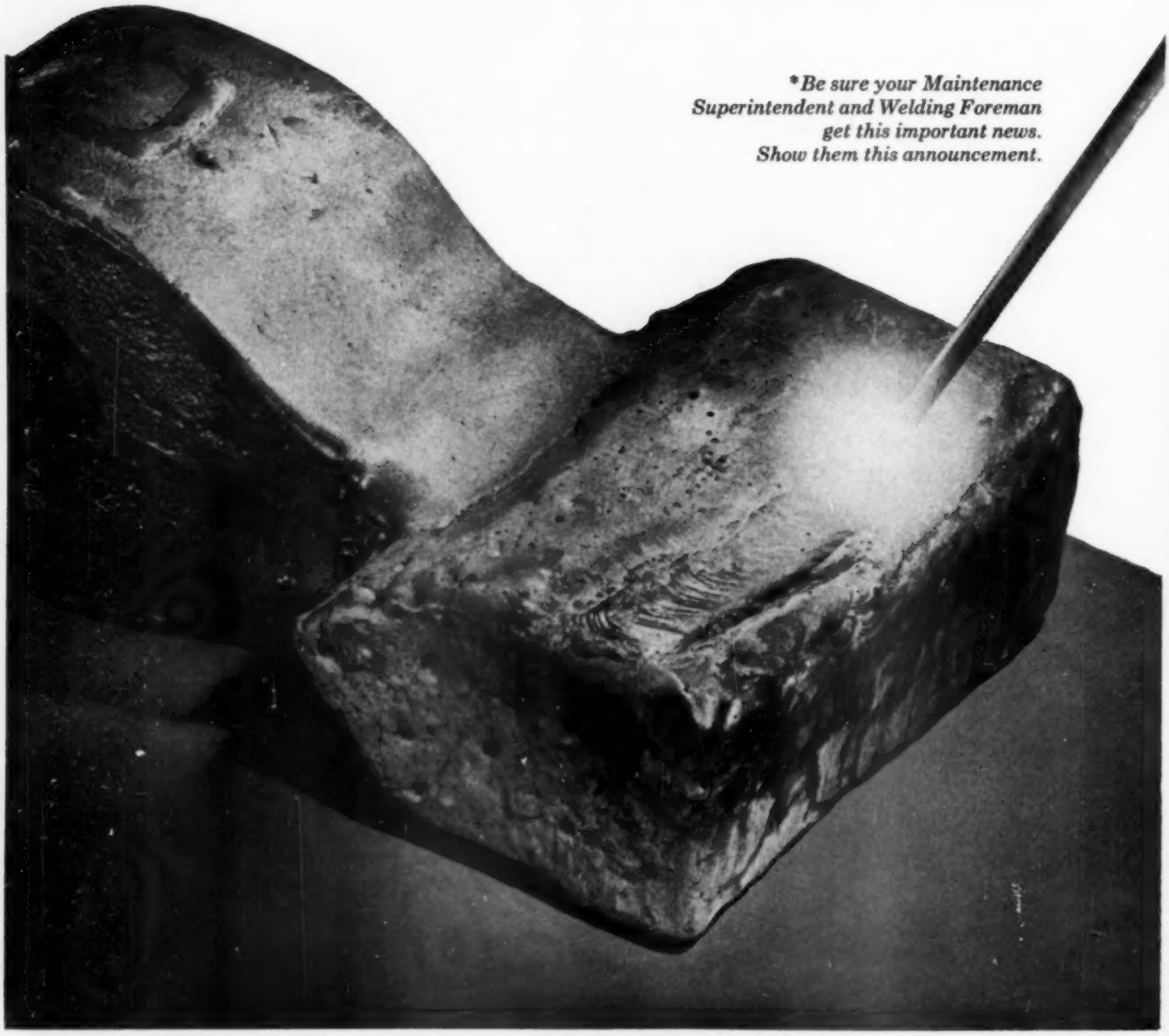
	1959	1960
Power generating equipment	$ 43.3	$ 45.6
Conveying equipment	22.8	24.7
Drilling, crushing and grading equipment	52.4	55.1
Power loading and excavating equipment	40.9	42.5
Trucking equipment	20.6	21.8
Washing and beneficiating equipment	35.1	37.3
New plant	61.7	66.0
Miscellaneous supplies, equipment and expenditures	37.4	39.6
Totals	$314.2	$332.6

Peter B. B. Andrews is ROCK PRODUCTS' *economic consultant and market analyst. He draws upon more than two decades of experience in forecasting future sales in this analysis of the coming year for the nonmetallic minerals industries. Mr. Andrews is chairman of the 311-man Board of Analysts of Future Sales Ratings. He has contributed industry analyses to no less than 100 leading trade magazines, as well as sales-projection-engineering studies for top industrial enterprises.*

*If you know MANGANESE,**
you'll like this new electrode!

STOODY NICKEL MANGANESE

WITH IRON POWDER COATING



**Be sure your Maintenance Superintendent and Welding Foreman get this important news. Show them this announcement.*

Here's a manganese electrode with improved ductility in weld deposits, freedom from cracks and excellent, overall weldability! Deposits possess full austenitic manganese work-hardening properties, matching manganese base metal, and provide physicals unexcelled in the industry! You'll find these new electrodes "tops" both for *joining* of parts and *buildup* of worn areas on all manganese steel equipment.

STABLE ARC—Unusual arc stability is insured by extruding a concentric alloy coating around a solid wire core. The arc runs smooth as silk with freedom from popping and spatter.

EASY RESTRIKE—One strike and the arc takes off effortlessly.

DENSE DEPOSITS—Deposits are free from porosity. Surface is bright and clean.

FAST DEPOSITION—Weldors lay down more metal with less effort—get jobs done quicker and easier.

EASY SLAG REMOVAL—Jobs clean up faster for multiple passes or in preparation for hard-facing overlays.

WHY WAIT? Check the unusual welding properties of this new, *better* manganese electrode today! Compare it with every other manganese electrode you've *ever* used...you'll agree it's the best in the field! Your Stoody dealer will be glad to have you test it on your own job!

PHYSICAL PROPERTIES:

(Based on tests by independent laboratory)

	DC Straight Polarity	DC Reverse Polarity
Tensile Strength	119,000 psi	111,000 psi
Yield Strength	67,000 psi	66,000 psi
Elongation in 2"	55%	37.5%

Hardness—Single pass on manganese steel; as deposited—15 Rc, as work-hardened—48 Rc.
Two passes on manganese steel; as deposited—18 Rc, as work-hardened—48 Rc.

STOODY COMPANY
11942 East Slauson Avenue
Whittier, California

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CONSTRUCTION KEEPS CLIMBING—1960 NO EXCEPTION

continued from page 89

■ *"We are entering the expansion phase of the present general prosperity period. Recoveries from business recession . . . are always accompanied by renewed expansion of plant capacity which . . . will be sharpened by the impressive view over the horizon of the golden decade of the sixties . . ."*

These potentials of equipment sales in 1960 stem from the board's anticipation of a record-high level of demand for the products of the nonmetallic mining industry. This is headed by a sharp upturn in private totals of nonresidential construction, particularly industrial building. There'll also be a rise in such commercial building as stores, restaurants, garages, office buildings, warehouses, hospitals and recreational buildings. Too, a jump is expected in municipal construction, such as sewage facilities and conservation and development projects. Municipal and state spending is expected to be up sharply in 1960 under the pressures of the dynamically expanding population, with hundreds of new facilities needed.

The important highway-building program emerged from the 1959 political wars healthy, if somewhat bruised. Under the uncertainties of obtaining federal money and the hampering effects of the steel strike, highway-building contract awards dropped substantially in 1959. Federal highway money finally was made available through the increased gasoline tax.

As a result, the program is running behind its original projection of expenditures, though there is no thought of a permanent reduction. Its impact on the construction and rock products industries is likely to continue massive. Fundamental forces motivating road building are the vigorous rise in population and families and in totals of vehicles on the road. There is no prospect of any lessening of such forces; to the contrary, there is every indication of considerable intensification of them. Cars, buses and trucks on the road now exceed 70 million. This year promises increased wear and tear on the nation's highways, with a gain in total vehicles to a further record high of 72 million.

The striking increase in the number of two-car families—from 2 million in 1949 to 8 million at present—reflects not only a rise of income over the years but also its broader distribution—and it's broadening constantly. Under these various pressures, and considering even the shifting winds of politics, the board estimates for 1960 a two-percent rise in the nation's highway building, to a total of $6 billion. This would compare with $5.9 billion in 1959. The '59 figure was about 10 percent higher than the '58 total of $5.364 billion.

Industrial private building should highlight 1959 construction-industry activity. The board estimates a minimum 20-percent jump in '60—to a total of $2.42 billion, compared with $2.018 billion in '59. The '59 total was down 15 percent from the $2.382 billion of 1958. Building of office structures and warehouses is expected to hit $2.017 billion in 1960, a three-percent rise over 1959's estimated total of $1.953 billion. The '59 total was down three percent from the '58 figure of $2.013 billion.

Stores, restaurants and garages, a strong segment of the building industry in '59, are expected to continue strong in '60. The board's consensus of estimates indicates a record total of $2.261 billion in such construction in the coming 12 months. That would be a 13-percent gain over the estimated '59 total of $1.996 billion, which was more than 26 percent higher than the 1958 total of $1.576 billion.

Other nonresidential building, including religious, hospital and institutional, educational, social and recreational and related buildings, is expected to reach a $3-billion record, up four percent over the previous 1959 record of $2.885 billion. The '59 showing was up seven percent over the '58 total of $2.704 billion.

The public sector of building, which is expected to run less than half the public total in 1960, is estimated to go one percent higher in '60 than in '59. Estimated spending total in this sector is $16.46 billion in the coming 12 months. That compares with $16.321 billion estimated for 1959, which was up about seven percent over the $15.-276-billion total of 1958.

Among the various segments of public building, the standouts in 1960 are expected to be industrial building, up seven percent, educational building, up four percent, hospital and institutional building, up six percent, highways, up two percent, and sewer and water construction, up seven percent.

The softest major segment of building is likely to be residential construction, though the decline here may be small or negligible. Tight money is

Please turn to page 94

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CONSTRUCTION KEEPS CLIMBING—1960 NO EXCEPTION

continued from page 92

> ■ *"Industry shows a growing awareness of the need for up-to-date production facilities, as well as a realization that delay could result in additional costs in a rising labor and materials market."*

the drawback, but conventional lenders, chiefly savings associations, may continue to attract new savings and make such funds available to home buyers on acceptable terms.

If funds are available, even at higher interest costs, the effect of tightening credit conditions may be less pronounced than previously. Then, too, the rising trend in multiple-unit construction, less sensitive to interest rates, also will work to support home building. Once such a trend gets started, it is likely to run for some time. So, the decline here may not be so great as might be expected under present money market tightness.

Current estimates of the board indicate private residential spending at $22 billion in 1960, only one percent below the 1959 estimated total of $22.23 billion. The projected level of activity still is high, measured in comparative terms. The '59 figures are estimated 23 percent higher than the $18.047-billion total of 1958. The public residential figures, representing less than four percent of the total private residential building figures, will make a less favorable showing—down an estimated 25 percent from '59. All this adds up to the previously mentioned record-shattering $56-billion year for new construction.

We are entering the expansion phase of the present general prosperity period. Recoveries from business recession, such as we had in '58, are always accompanied by renewed expansion of plant capacity which, in this case, will be sharpened by the impressive view over the horizon of the golden decade of the sixties, during which the children born of World-War-II and post-war marriages will themselves be marrying and creating added demands for consumer products, calling for more manufacturing capacity.

Expanding their facilities to keep pace with growing populations, businessmen in each quarter of '59 raised their sights over the preceding quarter. Thus, business outlays for new plant and equipment were scheduled at a $35.3-billion annual rate for the fourth quarter of '59, compared with $34.3 billion in the third quarter, $32.29 billion in the second and $30.62 billion in the first. In the fourth quarter of '58, such expenditures were at the annual rate of $29.97 billion. Industry shows a growing awareness of the need for up-to-date production facilities, as well as a realization that delay could result in additional costs in a rising labor and materials market.

In addition to our resurgent national economy, extra impetus for encouraging new plant construction is coming from the growing number of new products which have been in the research laboratory and pilot-plant stage for the past few years and which are now ready to be put on the market. Total research and development expenditures, government and private combined, are now estimated at more than $10 billion annually—over three times the figure at the beginning of the last decade. And, for 1960, the board expects research expenditures to rise 11 percent over '59. Impressively, the Bureau of Census occupational classification of professional, technical and kindred workers has become the fastest-growing group in the working population.

The growing use of automation and increasing obsolescence of many existing plant facilities also has been encouraging new plant expansion. Many manufacturers feel, too, that with the consumer steadily spending more, those companies which can outproduce the field stand a better chance to obtain a bigger share of the consumer dollar.

Reflecting optimism on the future, business "population" is on the rise, too, not only as to numbers of incorporations, but also as to numbers of branches. During the recessionary periods 1953-54 and 1957-58, growth in the business population was slowed down. Manufacturing, mining and the transportation divisions were most responsive to the slowdowns, while the service industries and wholesale trade were little affected. However, 1959 experienced large gains, with the result that the number of firms in operation hit a record total over 4.7 million, a rise of about 100,000 over the business population at this time last year. For further perspective on this trend, which is expected to go on strongly in 1960, business population totaled 4.6 million at the beginning of 1959, 4.5 million at the beginning of 1957, 4.4 million at the beginning of 1956 and 4.3 million at the beginning of 1955.

Businesses are in the best financial position (on

Please turn to page 158

VERSATILE SIMPLE AUTOMATIC

DRY SOLIDS CONVEYING

Cement	Petroleum Coke	Dolomite
Carbon Black	Pulverized Coal	Pharmaceuticals
Fertilizers	Fly Ash	Sand
Hydrated Lime	Fullers Earth	Fire Clay
Lump Lime	Soda Ash	Flour

Powdered and Granular Dry Chemicals

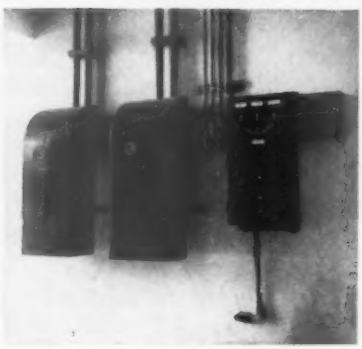
THE KENNEDY PNEUMATIC CONVEYING SYSTEM HANDLES THESE AND MANY OTHER PRODUCTS WITH *EASE* AND *ECONOMY*

Dry cement arrives at the plant by truck in KENNEDY Air Activated Containers. It is transferred directly by air pressure to this storage silo at 10 tons per hour through a 2½" pipe.

Eternit Colombiana S. A. looked for simplicity plus completely automatic operation for the dry cement handling system of their new asbestos-cement pipe and sheet plant at Bogota, Colombia.

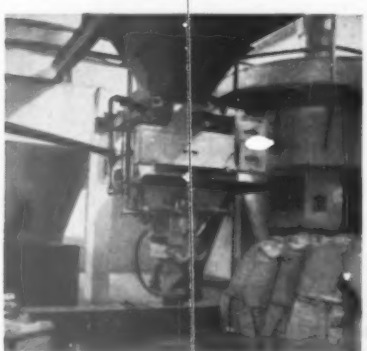
The KENNEDY Pneumatic Conveying System met—*and exceeded*—every exacting requirement.

A KENNEDY Pneumatic Pump is located immediately below the main silo. Batch transfer to intermediate bins is accomplished without screws or other rotating parts. Batch sequence is entirely automatic.



A low level control transmits a signal to this center as the level drops in any of three intermediate bins. All controls for the complete system are in the small right hand box; the two starters are for air compressors.

When actuated by the control center, this 3-way distribution valve opens the 2½" pipeline to the proper bin; the Pneumatic Pump then transfers a 1,000 pound batch of cement from the main silo.



Below each of the intermediate bins is a mixing station which correctly proportions the ingredients for the exact product composition desired. From delivery to finished mix—every operation is simply, automatically controlled.

This simplicity, versatility and dependability is characteristic of the KENNEDY Pneumatic Conveying System. Low maintenance is assured because there are no motors, screws or other major wearing parts exposed to the moving material.

Investigate this proven system for your materials handling problems.

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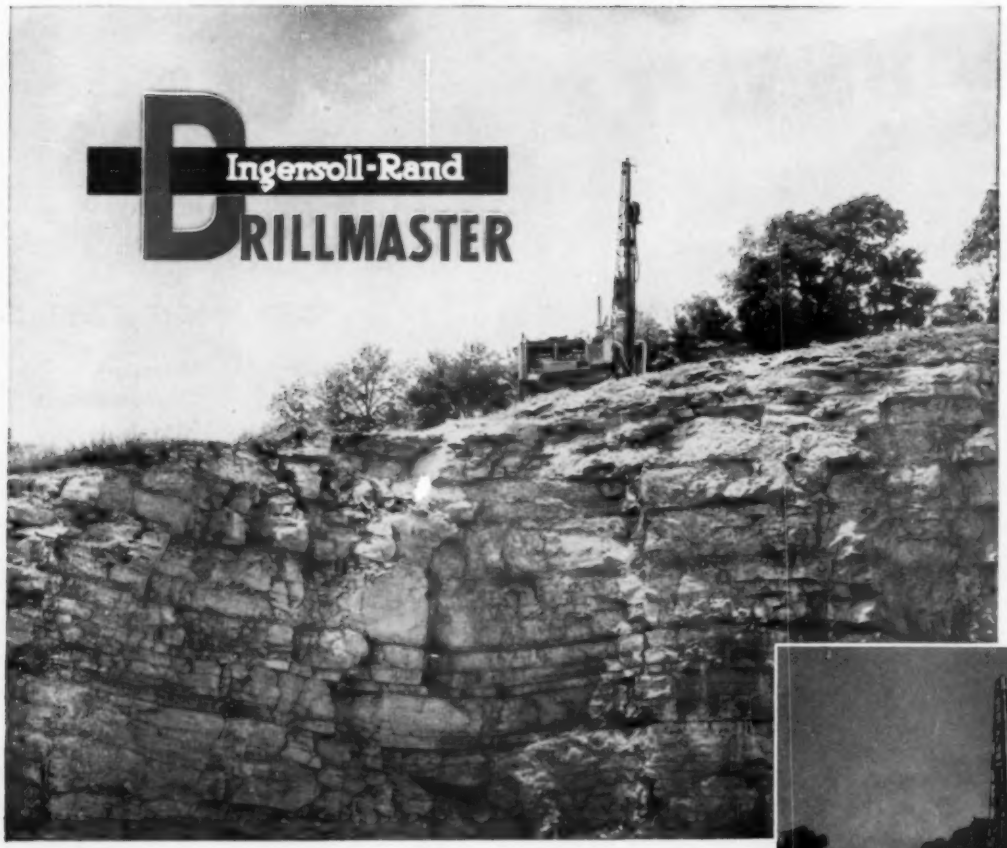

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The rugged, completely self-contained and self powered Drillmaster puts down hole after hole, with practically no set-up time. And to the powerful I-R Downhole Drill, limestone or embedded flint and marl are pretty much the same. Uniformly high drilling speed is maintained through all strata, *with no sacrifice in bit life.* That's because the tungsten-carbide-insert Carset bit is made for *hard rock*—withstanding impact forces and side-wall friction that would quickly damage any softer material.

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A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

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It's showtime in February

Here's a preview of what's in store at the NSGA and NCSA conventions and expositions

WHAT'S NEW IN THE AGGREGATES-PRODUCING FIELD? You must have the latest facts to compete for highway and other markets. And you must be informed of recent developments to cope effectively with business problems bearing on public relations and labor demands.

Here's your chance to size up the newest and best processing and production techniques: at the conventions and equipment shows that will be featured at the annual meetings of National Sand and Gravel Association and National Crushed Stone Association. Both will be held in Chicago on consecutive weeks beginning February 15, with NSGA starting things off.

The shows assemble as gigantic and complete a display of equipment for the aggregates producer as can be found anywhere. You'll do well to be on hand. Whether you attend either or both, you'll discover a fountainhead of information. This is your best opportunity to learn cost-cutting and product-improving methods.

Space for both exhibits is reserved at the Conrad Hilton Hotel, headquarters for the conventions. But, because of the size of its show, National Sand and Gravel Association's main exhibit will be at the nearby Coliseum.

On the following pages is our preview of what the shows hold in store. Emphasis is on new and improved equipment. Look it over for ways to cut labor costs and other expenses. We have selected more than 50 exhibits from a field of 170 manufacturers represented in the two shows—45 will take part in both.

Please turn page

CHICAGO WILL HOST MAMMOTH SAND AND GRAVEL MEETING

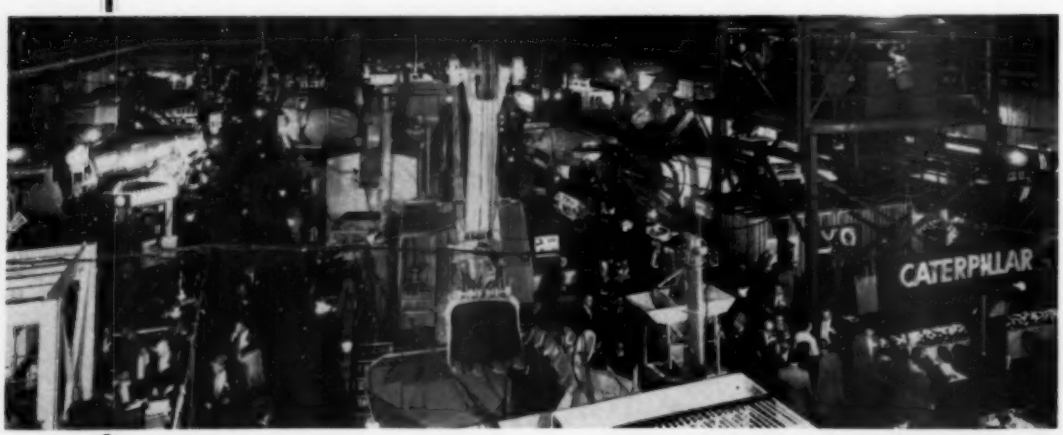
EVEN FOR CHICAGO, a city accustomed to hosting conventions, the National Sand and Gravel Association's meeting is a whopper. Particularly is this true when, as this year, the biennial equipment show is part of the proceedings. At the last show-convention, in 1958, more than 7,000 persons registered! A crowd of similar proportions will be on hand in Chicago again the week of February 15 for the NSGA 1960 convention and show.

New projects of the association are sure to be unveiled. Typical of NSGA's good work in the past is its notebook on public relations. And there is its pension plan, so outstanding that companies outside the industry are asking to be included.

Technical sessions, too, promise the excellence assured by the leadership of Engineering Director Stanton Walker. Typical of outstanding papers presented in other years: William L. Price's in 1958 on "Ten Years of aggregate beneficiation."

The equipment show will fill the Coliseum and exhibit hall of the Conrad Hilton Hotel. More than 140 manufacturers are taking part this year. Two full days before the convention starts (Mon. and Tues., February 15 and 16) the show will be open. A selection of the equipment to be displayed, especially the new and improved, is shown on succeeding pages.

This pre-convention report does not include the complete program, inasmuch as copies were not available at press time.



NSGA EXHIBITORS, February 15 thru 18, 1960

. . . *at the Conrad Hilton Hotel*

	Booth
American Manganese Steel Div., American Brake Shoe Co.	64
Autolene Lubricants Co.	17
Bucyrus-Erie Co.	65
Burkhart Engineering Associates, Inc.	11
C & W Sales Co., Inc.	77
Calcium Chloride Institute	90
Chicago Fly Ash Co.	28
Cleaver-Brooks Co.	39
Concrete Controls Corp.	85
Cross Perforated Metals Plant	20
Cummins Engine Co., Inc.	68
Frank D. Davis Co.	91
Deister Machine Co.	45
Detroit Edison Co., The	28
Dewey & Almy Chemical Co.	80
Diamond Iron Works Div., Goodman Mfg. Co.	76
Dodge Manufacturing Corp.	41
Eagle Iron Works	66
Engineered Equipment, Inc.	27
Flexible Steel Lacing Co.	57
Food Machinery & Chemical Corp., Florida Div.	6
Forrer's, a Div. of Spray-O-Bond Co.	56
Fruehauf Trailer Co.	88
General Electric Co., Communication Products Dept.	9
Gilson Screen Co.	61
Handy Co., Inc., Walter N.	28
Hardinge Co., Inc.	60
Hardy Scales Co.	47
Harnischfeger Corp.	25
HarriSteel Products Co.	13
Hendrick Manufacturing Co.	44
Hewitt-Robins Inc.	10 & 19
Howe Scale Co., The	62
Hoyt Wire Cloth Co.	22
Hydro Dredge Accessory Co.	52
Iowa Manufacturing Co.	4
Johns-Manville Corp., Celite Div.	73
Joy Manufacturing Co.	58
Kensington Steel Co.	16
King Manufacturing Corp.	53
Leschen Wire Rope Div., H. K. Porter Co., Inc.	48
Littleford Bros., Inc.	24
Ludlow-Saylor Wire Cloth Co.	36
McLanahan & Stone Corp.	35
McNeil Brothers, Inc.	28
Manganese Steel Forge Co.	32
Manitowoc Engineering Corp.	59
E. F. Marsh Engineering Co.	31
Massey-Ferguson Industrial Div.	87
Master Builders Co., The	46
W. R. Meadows, Inc.	29
Motorola Communications & Electronics, Inc.	5
National Conveyor & Supply Co.	26
Nordberg Manufacturing Co.	37
Northwest Engineering Co.	42
Pettibone Mulliken Corp.	63
Pick Manufacturing Co.	51
Pioneer Engineering Div., Poor & Co., Inc.	30
Plant City Steel Corp.	69
Productive Equipment Corp.	21
Radio Corporation of America	55
Richmond Screw Anchor Co., Inc.	74
Rogers Iron Works Co.	49
Sauerman Bros., Inc.	23
Screen Equipment Co., Inc.	1
Servicised Products Corp.	12
Sheppard Co., Inc., R. H.	54
Sika Chemical Corp.	71
Simplicity Engineering Co.	38
Smith Engineering Works	40
A. O. Smith Corp., Permaglas Div.	3
Soiltest, Inc.	7
Solvay Process Div., Allied Chemical Corp.	2
R. L. Spillman Co.	18
Stedman Foundry & Machine Co., Inc.	33
Stephens-Adamson Manufacturing Co.	14
Symons Clamp & Manufacturing Co.	50
Taylor-Wharton Co.	67
Thew Shovel Co.	43
Tyler Co., W. S.	34
Universal Engineering Corp.	63
Harry Warde & Co., Inc.	81
Wellman Co., S. K.	15
Werco Steel Co.	8

. . . *at the Coliseum in Chicago*

Allis-Chalmers Mfg. Co., Construction Machinery Div.	3
Allis-Chalmers Mfg. Co., Industries Div.	2
Allison Div., General Motors Corp.	54
American Hoist & Derrick Co.	49
American Pozzolan Co.	63
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Barber-Greene Co.	34
Blaw-Knox Co., Construction Equipment	29
Bin & Batcher Div., Chain Belt Co.	42
Butler Bin Co.	48
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Chain Belt Co., Industrial Div.	39
Chevrolet Motor Div., General Motors Corp.	7
Clark Equipment Co.	28
Clayton Manufacturing Co.	56
Columbia-Southern Chemical Corp.	55
Concrete Transport Mixer Co.	46
Construction Machinery Co.	23
Continental Motors Corp.	59
Cook Bros. Equipment Co.	19
Crane Carrier Corp.	5
Detroit Diesel Engine Div., General Motors Corp.	33
Diamond T Motor Truck Co.	40
Dodge Div., Chrysler Corp.	6
Eagle Crusher Co., Inc.	15
Erie Strayer Co.	37
Euclid Div., General Motors Corp.	1
Fleet Sales Dept., Ford Div. of Ford Motor Co.	16
Ford Motor Co., Tractor & Implement Div.	17
FWD Corp.	4
GMC Truck & Coach Div., General Motors Corp.	60
Gruendler Crusher & Pulverizer Co.	10
Heltzel Steel Form & Iron Co.	45
Hendrix Manufacturing Co., Inc.	13
Hercules Galion Products, Inc.	62
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International Harvester Co.	27
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Lima announces new 5-yd. shovel, 140-ton special crane

TYPE 1800

- Standard 5-yd. shovel with 35-ft. boom, 26-ft., 10-in. dipper handle; 7 or 8-yd. dipper for coal handling
- Converts to 112-ton crane
- Variable capacity dragline

TYPE 1800SC

- 140-ton special crane with 21-ft. wide truck base for stability with big lifts
- Converts to variable capacity dragline

These new Limas are designed to permit knock down for job to job transportation. Side assemblies come off as a unit—including belts, crawler chains and sprockets. Counterweights are removable. Backhitch-telescopic-type gantry folds down to 17-ft., 5-in. overhead clearance.

LOW MAINTENANCE REQUIREMENTS—You get more for your money when you buy a LIMA. They last longer, perform better, and require less maintenance. Lima offers you all of these important features in a single machine—

- **Air control**
- **Torque converter drive**
- **Anti-friction bearings at all important bearing points**
- **Large diameter clutches and brakes**
- **Two-shoe-type swing-propel clutches**
- **Combination rope-chain crowd**
- **Single-inside-type dipper handle, 15" square**
- **Extra long crane booms and special jibs available**
- **Convertible to crane or dragline**
- **9'-10¼" dia. roller path**
- **Six cone rollers, six hook rollers**
- **Standard or long, wide crawlers**
- **Diesel or electric power**
- **Knock down for highway transportation**
- **Independent two-drum boom hoist**
- **Independent propel**
- **Auxiliary third drum**
- **Power load lowering**

FACTS AND FIGURES on the new 1800 and 1800SC are yours for the asking. See your nearby Lima distributor today or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Type 1800 5-yd. shovel—one of five Limas owned by Mittry Construction, Los Angeles. Shown excavating at Abiquiu earth fill dam project, Shama River, N. Mex.

LIMA Construction Equipment Division, Lima, Ohio

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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

600

BALDWIN BLH LIMA-HAMILTON

Here's what you'll see at the NSGA show

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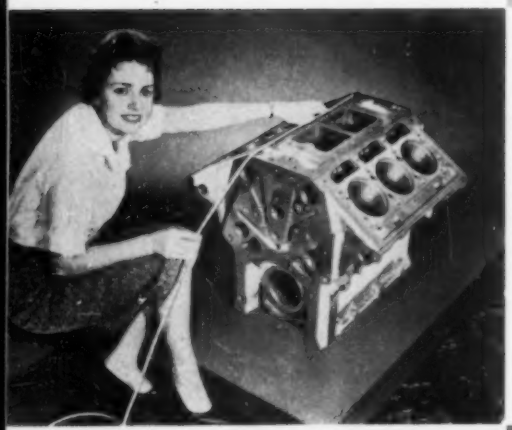
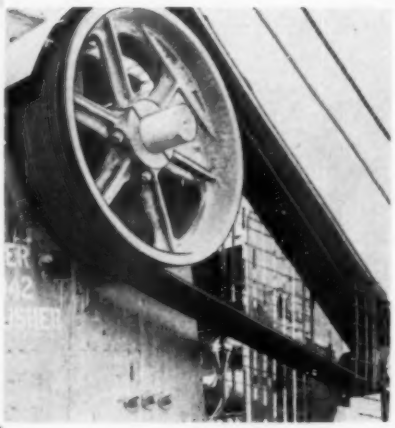
ABOVE: Fully independent control of each shovel function—including swing and travel—will be demonstrated colorfully at the Sand and Gravel show by an electronic diagram which any visitor may operate. The shovel to be shown is the ¾-cu. yd. LS-78. Called full-function design, the independent controls permit several operations to be carried out simultaneously, speeding the work cycle. The LS-78 retains the fully independent action even with (as shown here) reversing clutches on both drums, a boom lowering clutch and third drum. *Link-Belt Speeder Corp.*

RIGHT: Recently brought out as the biggest loader in its maker's line, the H-120 moves 7 tons of sand at a pass in this plant. Valley Sand & Gravel Corp., Rochester, N.Y., is using the tractor shovel to replace two ¾-cu. yd. swing shovels in doing two jobs—moving wet sand from conveyor to drying-out stockpile, and loading delivery trucks. It is handling about 400 tph. of sand in the process. Here's evidence of its speed: the unit loads a 21-ton truck in 2 to 2½ min., states the manufacturer. *The Frank G. Hough Co.*



LEFT: Smaller and lighter diesel truck engines are selling themselves to some producers who formerly used gasoline power. Other reasons for their popularity: long life and lower fuel cost. Two models, with V6 and straight-4 cylinder arrangements, will be shown in cutaway at the show by this manufacturer. The largest unit, a V6, puts out 252 hp., yet has a compact motor block only 22 in. long. Diesels have long been favored by fleet owners for their big trucks, but the great weight and size of the diesel power plants often made them impractical on smaller trucks until now. *Detroit Diesel Engine Div., General Motors Corp.*



RIGHT: A new tractor shovel with 11,000-lb. carry capacity has been introduced, designated PM-440 Speedall. Largest of a new class, it has buckets ranging from 3¼ to 4¼-cu. yd. capacity, heaped. Features: for top application of available power, it has power-shift transmission and Allison torque converter, plus power-transfer differential and four-wheel drive. Maximum dumping clearance is 9 ft. Extra features, unusual on a unit of this kind, are axles with four planet gears (instead of three) for greater safety factor, and wide-base, 20.5 x 25 high-floatation tires. *Pettibone Mulliken Corp.*

ABOVE: Stronger V-belt drives that take far less space can be more reliable for crushers and other rock products equipment, the maker of Dyna-V drives announces. Limited space factors are met by the new belts (only ⅜ and ⅝-in. wide) and drives. And the belts themselves, despite their size, are stronger and "exceptionally immune to stretching," continues the maker. This solves the problem of matching belts for uniform tension. Too, the belts have crowned top and concave sidewalls; they are also oil and heat-resistant. Photo shows installation of fourteen ⅝-in. belts on a big jaw crusher driven by a 265-hp. diesel engine. *Dodge Manufacturing Corporation.*

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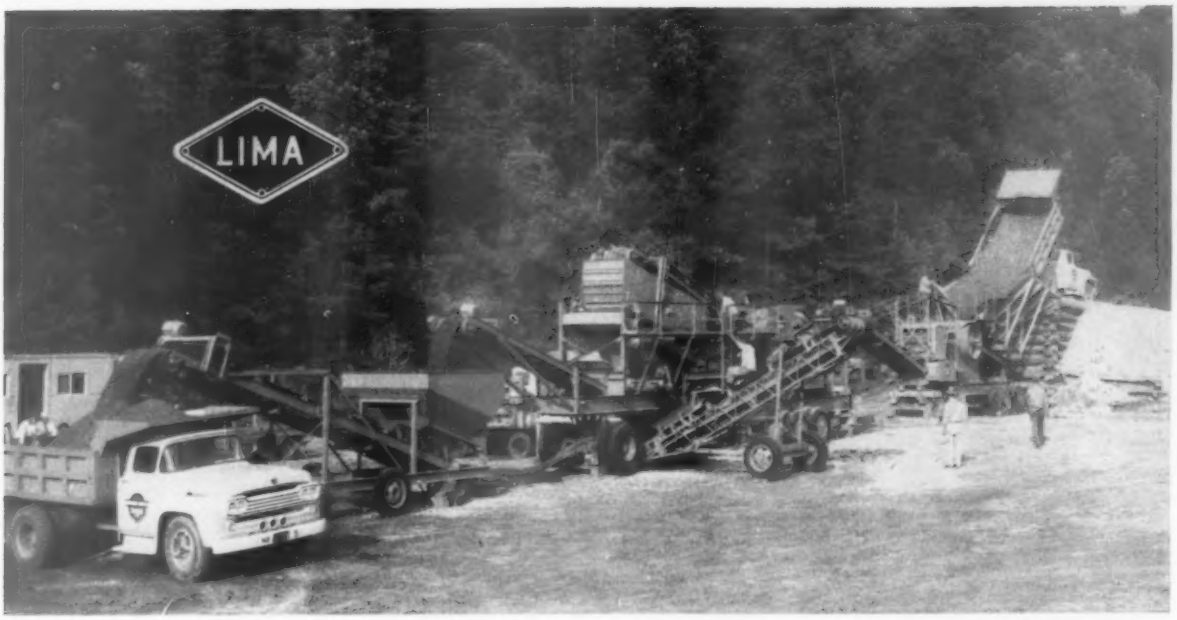

Completely portable Lima A-W crushing installation has primary 20 by 36-in. jaw crusher, Model 101-CE secondary plant and 7-yd. surge bin. Delivers exceptionally high production for Maymead Lime Co. in Tennessee.

How Lima Austin-Westerns BEAT RISING COSTS!

Higher output, lower maintenance. These two cost reducers are characteristic of Lima Austin-Western Crushing, Screening and Washing equipment.

Advanced engineering design assures top operating efficiency for years—free of maintenance problems and costly downtime. Improved manufacturing processes and extensive use of anti-friction bearings and heat-treated alloy steels also add to the dependability of this rugged, precision-built machinery.

Lima A-W offers a complete crushing, screening and washing line including jaw and roll crushers, matching screens, conveyors and bins. Stop increasing costs; learn how Lima Austin-Western meets your exact needs for low-cost, accurately sized specification materials. See your nearby distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Austin-Westerns available for stationary or portable installation.

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LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

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CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

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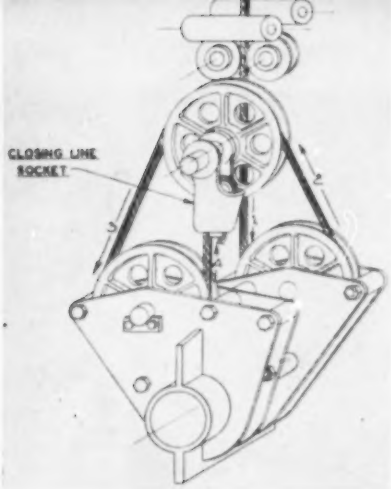

Here's what you'll see at the NSGA show

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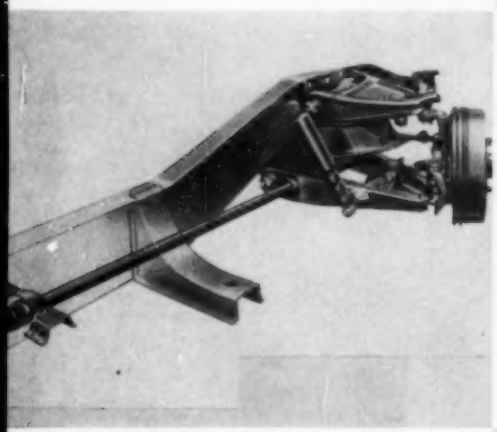
ABOVE: A clamshell bucket design which can double cable life—that's the claim made for this bucket with centerline reeving. What it means is this: The cable passes straight down, through the bucket head, to the first closing sheave without bending. There is less flexing of the supporting cables, and longer life, the maker claims. Available in both regular and wide designs, in sizes from ¾-cu. yd. capacity up, the buckets also feature other improvements: closing sheaves are designed to stay clear of the material being loaded, and the crosshead shaft is now welded steel instead of a casting. The latter change reportedly eliminates top-heaviness and boosts strength. *The Owen Bucket Co.*

LEFT: A new mechanical control device for sensing and actuating the valves on the Sandsort sand scalping tank is simpler and more reliable than older designs, the maker reports. It replaces the "delicate electrical controls and auxiliary hydraulic actuators in common use until now," and is said to be completely foolproof in operation. The new device will be shown in operation on a 20-ft. Sandsort at the Sand and Gravel Exposition. *Western Machinery Company.*



LEFT: A new V-6 engine and independent front suspension are the top design changes in this line of trucks. Both innovations to U. S. trucks, these and other changes are the most extensive ever combined in one truck line, the maker claims. Designed exclusively for truck work, the V-6 is said to have life potential up to three times greater than existing designs. Too, though it comes in three horsepower ratings (150 to 205) and in a big Twin-Six with 275 hp., many parts are common to all, permitting reduced capital outlays for replacement parts stocks. *GMC Truck & Coach Div., General Motors Corp.*

RIGHT: This 1-cu. yd. Terraload'r speeds the load cycle with its exceptional balance and smooth power flow, the maker states. With 1,000 lb. more weight on the rear wheels when empty, the loader reportedly does not buck. And with torque-converter drive, the 164-cu. in. gasoline engine adjusts automatically to the load, without clutching, shifting or stalling. One further feature claimed by this manufacturer: the Terraload'r has up to 73 percent more breakaway force because of simultaneous lift and bucket-tilt ability. *J. I. Case Co.*

ABOVE: A power shovel with long-life design, sturdy construction and simplified maintenance will be shown. Available as 2-cu. yd. dragline, clamshell or crane (capacity to 50 tons), the crawler unit has several features: round-edge, box-section shoes; quick hydraulic track adjustment, and independent swing-shaft assemblies for easy maintenance. Another feature, air control, has long been used in this line of shovel-cranes to make operation faster and easier. *American Hoist & Derrick Co.*

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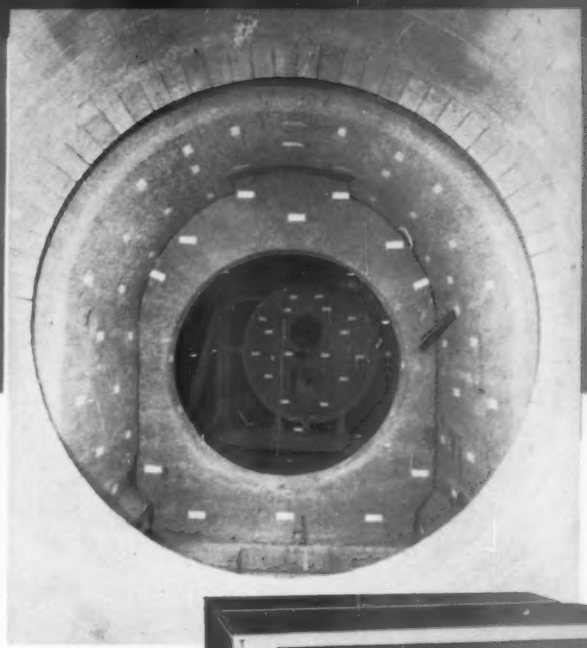
A. P. GREEN . . . SUPER HYBOND

JOB-ENGINEERED MONOLITHIC KILN FIRING HOOD



A. P. Green job-engineered monolithic refractory linings readily meet the complex construction requirements and varied service conditions in rotary kiln firing hoods. Furthermore, they offer specific advantages which can be money-savers.

The photograph illustrates A. P. Green SUPER HYBOND as recommended and installed in a typical firing hood. Notice the joint-free surfaces and positive anchorage throughout the lining. These features provide maximum protection against premature failure resulting from dust penetration, bulging, and buckling. Complicated, expensive masonry has been eliminated, as have resulting structural weaknesses.

SUPER HYBOND is a natural choice for such installations. It is a super duty plastic that develops high strength throughout the entire thickness of the lining—increasing the holding power of the anchors. Its high refractoriness readily withstands excessive temperatures, such as might occur in the seal ring or crown areas. Spalling and abrasion resistance are excellent.

A. P. Green offers a complete line of refractory products for the cement and lime industry. Whatever your requirement, for specific recommendations without obligation, contact your local A. P. Green Distributor . . . he's listed in the yellow pages of your telephone directory.

A. P. GREEN FIRE BRICK COMPANY

Mexico, Missouri, U. S. A.

PLANTS: Mexico, Mo.—Woodbridge, N.J.—Sulphur Springs, Texas—Jackson, Oak Hill, South Webster, Ohio—Philadelphia, Climax, Tarentum, Pa.—Troy, Ida.—Pueblo, Colorado—Macon, Ga.—Birmingham, Ala.

In Canada: A. P. Green Fire Brick Co., Ltd., Toronto 15, Ontario

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FIFTY YEARS OF PROGRESS

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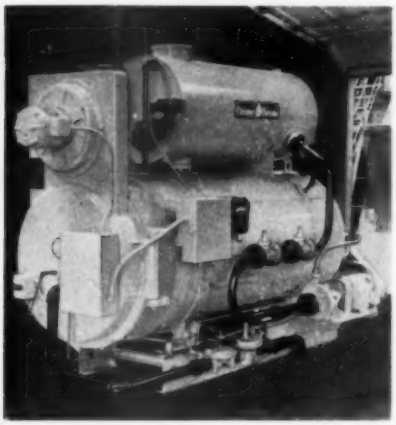
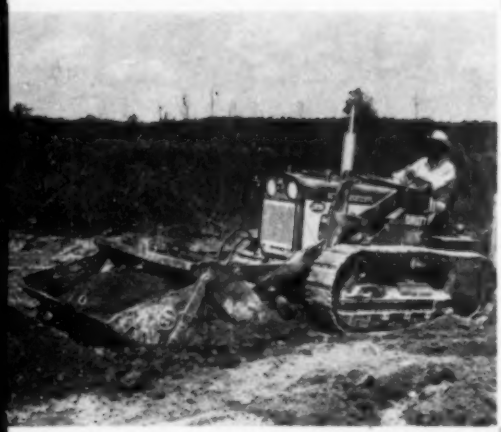
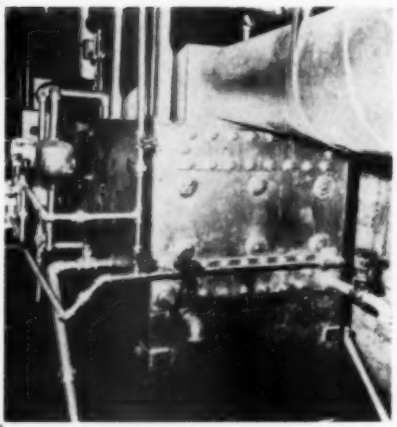


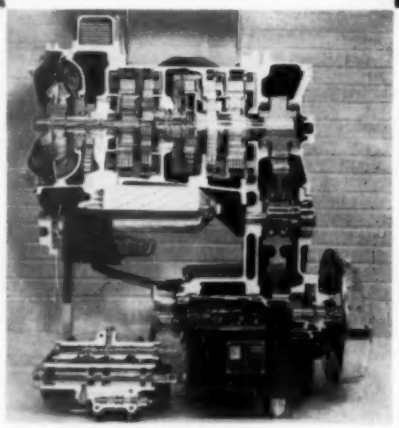
ABOVE: The Contractor's Peak-Temp oil heater is a unit used by asphalt contractors and others to heat construction materials. The CPT heats transfer oil to 450 deg. F. Use of transfer oil instead of steam is said to mean (1) safer operation, since it operates at high temperature but at safe atmospheric pressure; (2) faster heating of bituminous materials, and (3) more convenience, since there is no need to condense steam, and no water freeze-up problem. Both gas-fired and oil-fired models are available. *Cleaver-Brooks Special Products Co.*

RIGHT: This four-wheel-drive pickup can be switched to two-wheel drive for easy going or on-highway use. Its central power-transfer case, when shifted to "front wheel drive," multiplies the main transmission ratios for added pulling power. On the market for just one year, the line is now the world's second most popular, says *Ford Div., Ford Motor Company.*



LEFT: The 4-in-1 skid shovel, a multipurpose unit with bucket capacity of ⅞-cu. yd. heaped, has been adapted for use with the new T-340 crawler tractor. The unique two-piece bucket can serve four jobs: standard loader, bulldozer, carry-type scraper and clamshell, its maker states. Working as a regular loader, it can dump in two ways—conventionally, or through the bottom by lifting the bucket's front half. Skid shoes reportedly permit pry-out force triple that in conventional loaders. The Drott skid shovel is quickly changed to a dozer by lifting the bucket's front half. *International Harvester Company.*





RIGHT: "The only fully automatic truck transmission on the market today for medium and heavy-duty trucks" boosts profits by speeding up the haul cycle, cutting operating and maintenance costs, its maker states. Designed for heavy-duty, off and on-highway trucks in the 200-hp. class, the MT-series transmission has six speeds, plus a hydraulic retarder for safer downhill runs. The transmission is available in Reo, Chevrolet, Ford, Dodge and GMC trucks. *Allison Div. of General Motors Corporation.*

ABOVE: "One of the simplest boilers for maintenance purposes" is the way the maker describes its new Consolidated Duo Boiler. Latest improvement is the provision of two rear plates that simplify cleaning out this 35-hp. boiler. Every part of the unit is quickly cleaned and inspected; this includes the removable back-plate for examining combustion area, the removable rear plate for inspecting the flues and the removable cover to permit looking down into the flues. *Burkhart Engineering Associates, Inc.*

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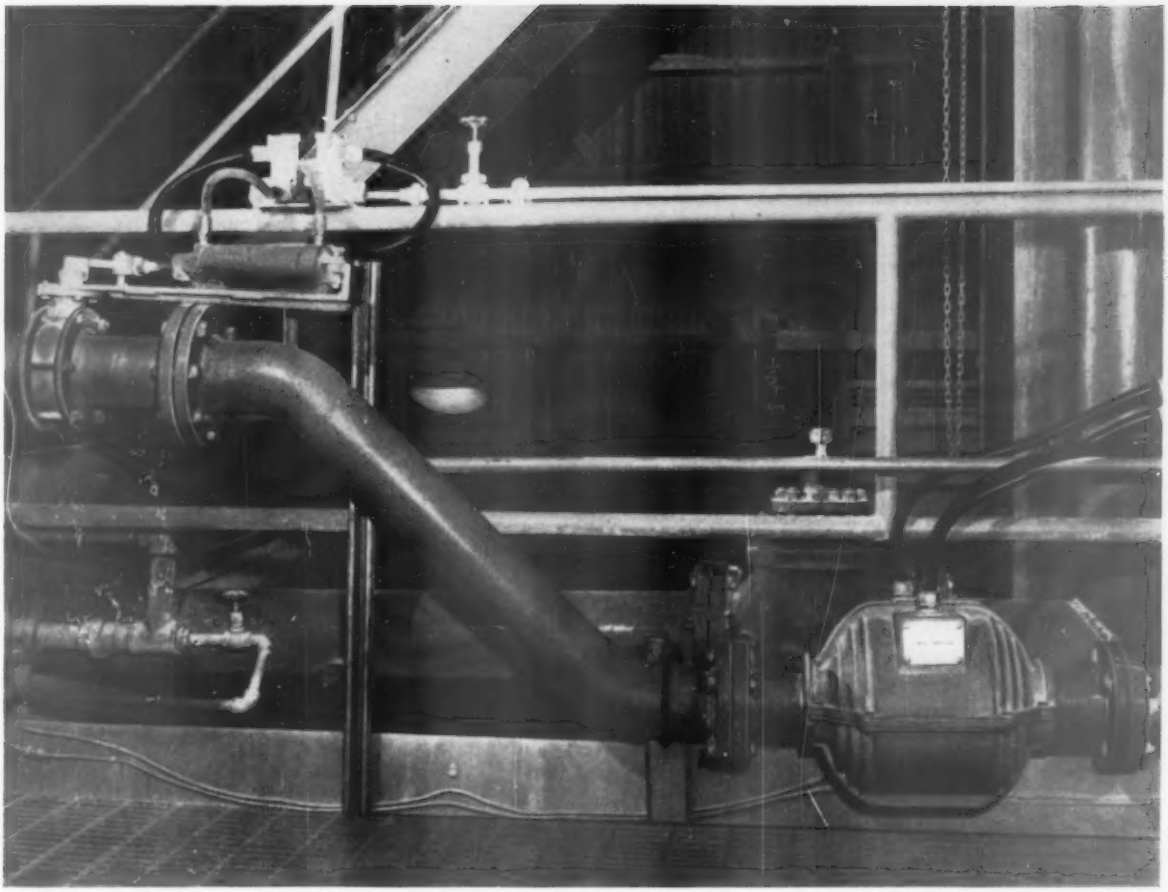

Missouri Portland Cement Company automatically measures and controls additions of shale slurry to kiln feed with this 3" Foxboro Magnetic Flow Meter. Since installation in 1956, only minor servicing and inspection have been required to insure continuing accuracy.

Shale slurry metered simply... automatically

with Foxboro Magnetic Flow Meter

Operator sets amount of shale slurry to be added, then pushes "start" button. Foxboro Dynalog Recorder (at left) records and totalizes flow passing through Magnetic Meter. When desired amount of shale has been added, control valve closes — automatically.

"We used to ratio shale slurry by manually operating a pinch valve and spot checking the flow rate," reports Missouri Portland Cement Company, St. Louis, Mo. "It was inaccurate and time-consuming."

"Now our Foxboro Magnetic Flow Meter does it automatically. And, after a 30-day continuous check of volumes, we found its accuracy to be ±0.2% — assuring us that our rigid requirements for kiln feed batches would be met."

Foxboro Magnetic Flow Meters are ideal for measuring industry's most difficult fluids. Installed as simply as a length of pipe, they have no pressure taps to plug up... no orifice plates to clean... no line restrictions of any type. Instead, electrodes, flush-mounted in the meter wall, sense the flow rate and transmit it to a remote Dynalog* Electronic Recorder. Measurement is linear and continuous.

There are literally *hundreds* of Magnetic Flow Meters in operation today—metering almost every type of liquid except hydrocarbons. Get full details by writing for Bulletin 20-14C. **The Foxboro Company, 831 Neponset Ave., Foxboro, Mass.**

Reg. U. S. Pat. Off.

FOXBORO

REG. U.S. PAT. OFF.

MAGNETIC FLOW METERS

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Here's what you'll see at the NSGA show

continued from page 106

ABOVE: Excavators—both Slackline Cableway and Dragscrapers—are designed by this firm to give low-cost digging and hauling from gravel deposits. The Slackline (pictured) actually lifts material out of the pit and makes a stockpile. The Dragscraper, a large crescent-shaped bucket without a bottom, drags the material out of deposit, but doesn't lift it. Each can be operated by only one man, and can handle both digging and hauling. *Sauerman Bros., Incorporated.*

LEFT: Brand new truck accessibility, with swing-out fenders, gives "the fastest and most convenient engine accessibility in the industry," this maker says of its new series of medium and high-tonnage trucks. The fenders and a wide-swinging hood on the "P" series reportedly give tilt-cab engine accessibility at less than tilt-cab price. A second new feature—for the low-priced three—is the availability of diesel power. Cummins diesels with power ratings from 175 to 200 hp. are available. Stronger transmissions, clutches and frames have boosted ratings as much as 4,000 lb. *Dodge Div., Chrysler Corp.*

LEFT: This new 211-hp. crawler tractor features power-shift transmission and a unique system of common braking and steering. Shifting speed ranges can be done under full power with power-shift Torqmatic. And the common braking-steering system means smooth, positive track control (and no adjustment of steering clutches or brakes), reports *Euclid Div., General Motors Corp.*

RIGHT: "Tuffy" brand wire rope slings, made of patented, high-carbon wire and then machine braided, are designed to be very flexible and non-kinking. The nine-part rope is specially braided for slings, unlike stranded rope such as the 6 x 19 and the 6 x 37. As a result, a fabric is formed which can be bent repeatedly around small radii or abrupt corners. Even when one of the nine parts is cut, stranding reportedly does not result. While the braided construction may appear to be hand-made, actually the rope is formed on a machine, eliminating irregularities of hand forming, says the maker, *Union Wire Rope Corporation.*

ABOVE: Fast loading cycle is insured with the instant reverse feature of this line of tractor shovels, states the maker, and Torque converter and power steering make the job easier. Reversing clutches operated through foot pedals provide the instant forward-reverse capability of the 406 and 1001 models, both of which have 1-cu. yd. buckets. Among other front-end attachments are angle dozer, lift fork and swinging crane. *Massey-Ferguson Industrial Div.*

Please turn to page 110

Geared by FULLER...

Davison's rigs move more payload in less time

J. K. Davison & Bro., Pittsburgh, one of the largest ready-mix purveyors in western Pennsylvania, is supplying concrete for the Steel City's gigantic new civic-sports arena.

To increase the capacity of their ready-mix fleet, Davison recently purchased two high-payload Diamond T trucks with 8-yard mixers, 212 hp engines, Fuller Model 5-A-65 5-speed Transmissions and Eaton-Hendrickson Model 38DS Tandem Rear Axles.

Selected because of their proven reliability and ease of operation, the Fuller 5-A-65 Transmissions help provide the proper gear ratios for high maneuverability on congested job sites as well as added flexibility in city traffic.

Davison's new trucks feature four-axle construction, permitting GVW of 60,000 pounds. Because chassis weight has been held to 16,000 pounds, high payloads are possible . . . and because the Fuller 5-A-65 Transmissions permit the operator to select proper gearing for every situation, Davison is able to hustle more ready-mix to the job in less time.

There is a Fuller Transmission designed to put more profit in *your* operation. For details, contact your truck or equipment dealer.

FULLER

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Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

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Here's what you'll see at the NSGA show

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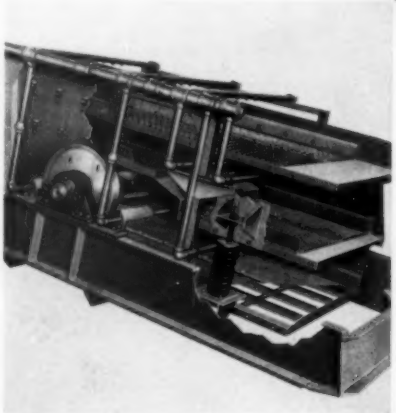
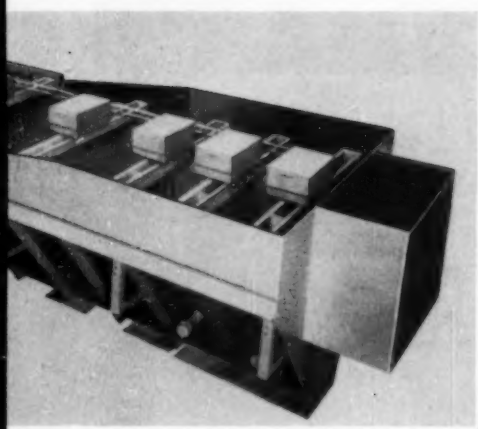
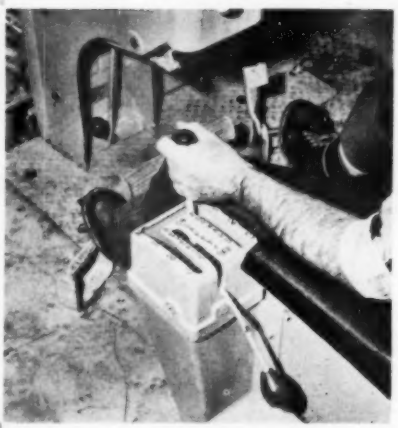
ABOVE: This vibrator, for railroad cars or hoppers, has the greatest amplitude vibrations in the Vibrolator line. Too, vibration frequency can be precisely controlled from a few cycles to more than 60 per second. The Vibrolator CCVP, termed ideal for moving materials from cars and big bins and hoppers, is portable and can be mounted at any convenient angle. The air-operated unit is shockproof and sparkproof. Noise level is said to be low at all frequencies. *Martin Engineering Co.*

RIGHT: New Hydro-Screen reportedly boosts screening capacity because it has high-pressure spray bars on all three decks. This is said to give several times the screening capacity of a dry screen. In addition, a stepped (two-part) second deck cascades the material over a drop; a spray bar placed at this spot insures complete washing of every particle. Two separate sets of springs—eight in all—insure that vibration is isolated. *Pioneer Engineering Div., Poor & Co., Incorporated.*





LEFT: A glass side panel in this Water Scalping-Classifying Tank will enable producers to see how it operates. The tank eliminates the very fine particles—slimes and clay—from sand, and makes a size separation of the remaining sizes. Electrically controlled valves beneath each of the small boxes discharge each size separately. *Eagle Iron Works.*



RIGHT: Brand new to heavy-duty U. S. trucks is independent front suspension with torsion-bar springs, as featured by this manufacturer. Giving big tandems a 9,000-lb. front axle rating, the front suspension reportedly provides greater truck stability. This, in turn, means higher safe-haul speeds, increasing ton-miles per day. Rear suspension on the tandem-axle units has 16,000-lb. capacity axles. The Hendrickson tandem drive system is used because of its simple design, light weight and low maintenance. At the inter-axle differential, a lockout gives top traction when needed. *Chevrolet Motor Div., General Motors Corp.*

ABOVE: Single-lever power shift control on this 235-hp. crawler permits shifting up or down under load. Operator moves lever to the right side of the horseshoe-shaped guide for the three forward ranges, to the left for the three reverse ranges. The new power shift reportedly helps speed stockpiling, ripping, stripping of overburden and scraper push-loading. *Caterpillar Tractor Co.*

Please turn to page 112

What makes MANITOWOC

a great quarry shovel?

Here's the straight story

More pit operators turn to Manitowoc every year for big, steady output with the lowest maintenance cost. They've found that these husky shovels stand up to the grinding punishment of quarry work without sacrificing power, speed or operating ease. Following are just a few of the basic reasons why you should see your Manitowoc distributor right now for the full, profitable story.

A SOLID, WIDE-SPREAD BASE with a one-piece carbody mounted right on the crawler frames. No amount of hard rock digging can affect the rugged crawler base.

COMPACT, POWERFUL MAIN MACHINERY makes full use of every unit of horsepower. Line pulls exceed normal requirements to give you reserve capacity.

A FAST CYCLE WITH DIRECT POWER-FLO drive provided by the unique Manitowoc slide pinion arrangement. Only working gears turn — all others are disconnected until their function is needed.

UNDER-DRIVE, TWIN DIPPER STICKS take the shock of rock in stride . . . deliver a more powerful crowding action at the dipper.

STURDY, ALLOY STEEL BOOM welded in elongated tubular form easily meets the extraordinary bending and twisting stresses of quarry work.

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

SHOVELS
1¼ to 6 YDS.

Manitowoc

CRANES
25 to 125 TONS

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Here's what you'll see at the NSGA show

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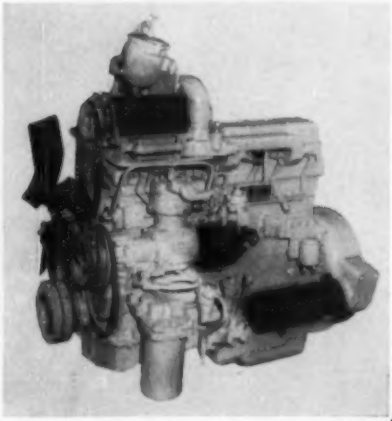
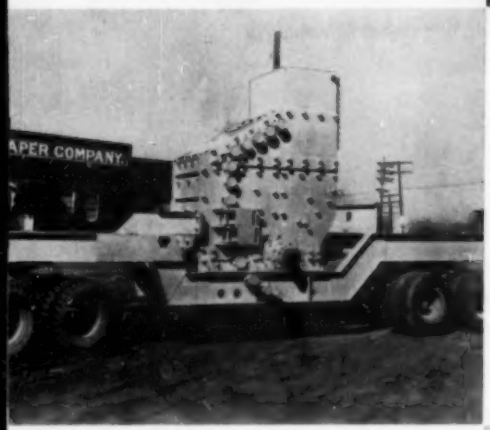
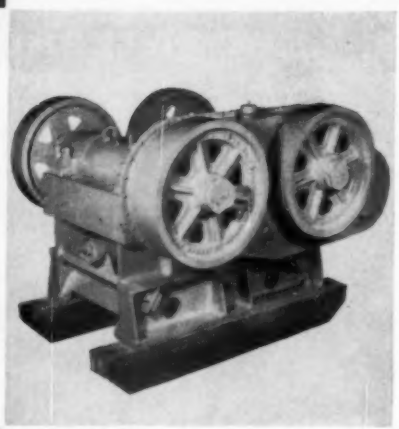


ABOVE: Ideal for stop-go driving such as encountered by rear-dumps and loaders—that's the description of the new 160 and 175-hp. (supercharged) diesel engines offered by this firm. Precise diesel-engine fuel metering means reduced operating costs, because of fine fuel economy at idling and when lightly loaded, the maker states. Both engines are 464-cu. in., six-cyl. units weighing about 1,550 lb. They are smaller and lighter than diesels of this power previously available, so are better suited to trucks. Large engine displacement insures good fuel economy and fast acceleration, maker of the C-160 and C-175 states. *Cummins Engine Co., Incorporated.*

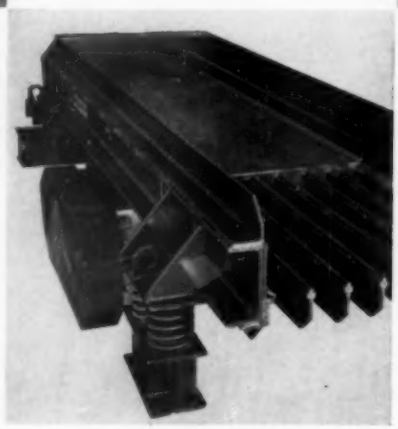
LEFT: Greater protection against belt-edge damage is provided by this line of belt conveyors. Several design features contribute. First, there is a 5½ in. space between return run and the nearest frame member, said to be twice the space allowed in other units. Second, pulley faces can be made wider because the conveyor frame is wider; 2 in. from belt edge to pulley edge is reportedly twice the amount in other units. This means greater safety in case of "belt wander" in high-tension areas, according to the manufacturer. *E. F. Marsh Engineering Co.*



LEFT: A new single-rotor impact crusher has been introduced, for which its manufacturer claims several superior features. First, a single rotor has lower maintenance cost, since fewer parts need replacing; moreover, capacity is about the same as that of two-rotor units. Second, an extra-heavy rotor has enough stored inertia to break even the largest chunks. Third, a special lower chamber design permits any large piece passing the feed opening to be crushed without bridging. The crusher is available in three sizes, with capacities ranging to well above 1,000 tph. *Rogers Iron Works Company.*



RIGHT: A cost-cutter because it replaces two separate items, this grizzly feeder serves as both apron feeder and scalping screen for cobbles. It reportedly costs less than 50 percent of an apron feeder and scalper together, and will withstand heavy shock loading because of its spring arrangement. *Simplicity Engineering Co.*



ABOVE: A twin-jaw crusher will be featured at this firm's exhibit. Recently introduced, the design makes use of two jaws to: (1) give higher impact velocity for breaking harder materials; (2) minimize rubbing, assuring longer jaw life, and (3) increase productive capacity by 40 to 100 percent. The twin-jaw crusher is available in 1216, 1236 and 1836 sizes and can be used as either primary or secondary crusher. Other design features include extra-heavy eccentric shafts, each with two heavy flywheels to handle surge feeding without extra power. *Iowa Manufacturing Company.*

Please turn to page 114

NOW—Low Cost—High Profit

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Here is the modern solution to low cost production of specification sands. No more constant manipulation and adjustment to meet tough specs. This marvel of sand production is producing specification sands at greater efficiency and lower costs than you ever realized possible. Once production is started, the sands are automatically classified, blended and stockpiled without labor. Meckum-Floatex Systems available to meet any requirements.

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BIG THINGS ARE ON AGENDA FOR CRUSHED STONE MEETING

CRUSHED STONE PRODUCERS have every incentive to gather in Chicago the week of February 22. Advance information issuing from Executive Director J. R. Boyd and his staff at headquarters of National Crushed Stone Association promises another top-notch convention and equipment exposition. Headquarters hotel is the Conrad Hilton.

What can you expect to hear at the meeting? Mr. Boyd says attention will be given to a group of subjects including "Latest in plant design for large-volume production." There also will be two talks on blasting complaints and how to minimize them.

The crushed stone group has done important work in many important areas, and you will hear more about them at this year's convention.

There will be lots of new developments to catch up on at the equipment exhibit, the first in two years. You can look at all the makes of machinery and pick the most efficient for your operation, because in no other situation will you find so many equipment makers gathered in one spot.

Some of the items to be shown are described on the next few pages with emphasis on the new and improved. Look the section over for ideas on how to pare labor and operational costs.

This pre-convention report does not include the complete program, inasmuch as copies were not available at press time.

NCSA EXHIBITORS, February 22 thru 24, 1960

. . . at the Conrad Hilton Hotel

Allis-Chalmers Manufacturing Co.	Booth 77
American Cyanamid Co.	46
American Manganese Steel Div., American Brake Shoe Co.	2
Atlas Powder Co.	80
Austin Power Co.	17
Baldwin-Lima-Hamilton Corp.	57
Barber-Greene Co.	6
Brunner & Lay Rock Bit of Asheville, Inc.	67
Bucyrus-Erie Co.	1
Cape Ann Anchor & Forge Co.	16
Caterpillar Tractor Co.	70
Chain Belt Co.	4
Clark Equipment Co.	5
Cross Perforated Metals Plant, National-Standard Co.	43
Cummins Engine Co., Inc.	76
Deister Machine Co.	64
Diamond Iron Works Div., Goodman Manufacturing Co.	9
DuPont deNemours & Co., E. I.	32
Eagle Iron Works	85
Easton Car & Construction Co.	14
Electric Steel Foundry Co.	47
Frog, Switch & Manufacturing Co.	42
Hardinge Co., Inc.	73
Harnischfeger Corp.	8
HarriSteel Products Co.	35
Hendrick Manufacturing Co.	63
Hercules Powder Co.	65
Hewitt-Robins Inc.	40
Hoyt Wire Cloth Co.	84
Hughes Tool Co.	3
Ingersoll-Rand Co.	78
International Harvester Co.	34
Iowa Manufacturing Co.	27
Jaeger Machine Co.	49
Jeffrey Manufacturing Co.	28
Joy Manufacturing Co.	71
Kennedy-VanSaun Manufacturing & Engineering Corp.	72
Kensington Steel Div., Poor & Co., Inc.	Booth 37
Koehring Div., Koehring Co.	26
Ludlow-Saylor Wire Cloth Co.	60
McLanahan & Stone Corp.	61
Mack Trucks, Inc.	69
Manganese Steel Forge Co.	52
Marion Power Shovel Co., Div. of Universal Marion Corp.	39
Marsh Engineering Co., E. F.	83
Mayhew Supply Co., Inc.	36
Murphy Diesel Co.	68
Nordberg Manufacturing Co.	59
Northern Blower Co.	15
Northwest Engineering Co.	82
Olin Mathieson Chemical Corp.	48
Pioneer Engineering Div., Poor & Co., Inc.	24
Productive Equipment Corp.	44
REICHdrill Div., Chicago Pneumatic Tool Co.	30
Rogers Iron Works Co.	81
Schramm, Inc.	38
Screen Equipment Co., Inc.	29
Simplicity Engineering Co.	55
Smith Engineering Works	58
Stardrill-Keystone Co., Div. of Koehring Co.	25
Stedman Foundry & Machine Co., Inc.	53
Stephens-Adamson Manufacturing Co.	33
Taylor-Wharton Co., Div. of Harsco Corp.	7
Thew Shovel Co.	62
Thor Power Tool Co.	50
Torrington Co.	41
Traylor Engineering & Manufacturing Co.	56
Tyler Co., W. S.	54
Universal Engineering Corp., Subsidiary of Pettibone Mulliken Corp.	79
Werco Steel Co.	31
White Motor Co.	51
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.	66
Williams Patent Crusher & Pulverizer Co.	45

HERE'S WHAT YOU'LL SEE AT THE NCSA SHOW

LEFT: This brand new front-end attachment makes a 5-cu. yd. loader out of a basic 1½-cu. yd. crane-excavator. The waste motion of drive-in, back-out loaders is eliminated by its 360-deg. swing and its long, 9-ft. 10-in. horizontal crowd, the maker reports. Faster truck loading, reduced travel wear and lower fuel consumption are the results claimed. Another feature of the Model 64: 16-ft. 10-in. dumping height at 18-ft. radius. Diesel or gasoline engines are available. A torque converter automatically adjusts to the load and eliminates engine stall. The Model 64 is convertible into a 1¼ to 1½-cu. yd. shovel, or a variable-capacity dragline. *Baldwin-Lima-Hamilton Corp.*

Please turn page

Here's what you'll see at the NCSA show

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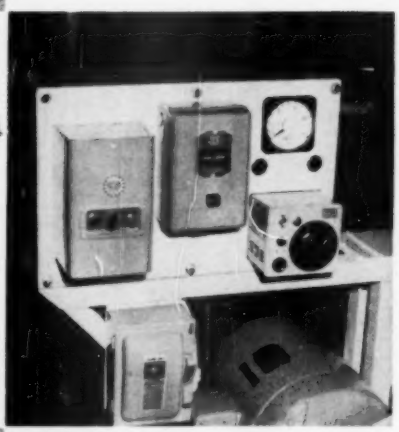
RIGHT: A new rock drill, the 450-DR Dual Rotation drill using 4½-in. bits, is improved to permit coupling and uncoupling drill steel without hammering. Extra rotation power is provided for drilling in tight rock formations—a vane-type air motor does the trick. It is engaged to drive the chuck when changing steels, giving independent rotation to turn the chuck and spin out drill steels without hammering them. Further, the air motor gives added rotation power when drilling in tight or hard formations. Normally, though, standard rifle-bar rotation is sufficient. Drilling speeds are said to be 25 percent faster. *Joy Manufacturing Co.*

ABOVE: Two new heavy-duty, crawler-mounted drills are well suited to rough terrain, and work close to a cliff edge or quarry wall, the maker reports. The diesel-powered Rotadrills, models 250 and 600, are equipped both for rotary and bottom-hole drilling. All controls are hydraulic, with each track and the top head powered by separate hydraulic motors. Model 250 exerts 11,000-lb. down pressure, drills holes 3 to 6 in. diam. and has tubular masts of 12, 17 or 22 ft. The larger model 600 exerts 26,000-lb. down pressure, drills holes 4½ to 8 in. diam. and has masts with rotation head travel of 25, 35 or 42 ft. *Schramm, Inc.*

LEFT: This new 40-ton truck crane is proving popular for drop-ball secondary fragmentation application. Truck cranes reportedly are chosen for this task because their wheels give a wide spread of ground bearing points. Too, pneumatic tires help dissipate impacts created when the ball is released. Among features of the P&H 565A-TC crane is magnetorque, a patented method of transmitting power electromagnetically to the swing system. It is more reliable becaues it eliminates friction clutches —and attendant lining replacement, adjustments and maintenance, the maker states. *Harnischfeger Corp.*



RIGHT: Announced in the last year, this 2-cu. yd. Moto-Loader has one-foot control of travel direction and speed for fast, smooth cycles (and leaving hands free for other jobs). The model ML-157 has four-wheel drive, torque converter and fully automatic transmission. A 6-cyl. engine of 363-cu. in. displacement provides 105 hp. Other improvements include revised lift-arm geometry (eliminates hazardous "scissor action") improved weight distribution plus low center of gravity to minimize bounce, sway and jiggle. *Thew Shovel Co.*

ABOVE: Optimum loading of certain types of crusher without overloading is possible with this feeder-crusher load control. It controls the start-stop switch (and can vary feeder output) of a vibrating feeder, keeping the load of rock in the crusher at the desirable level. The device consists of the load-control unit, a current transformer placed in one line to the crusher motor and a contactor to turn the feeder on and off. Principle of operation: in many crushers, motor current reflects the condition of loading. Where the producer wishes only to vary feeder output, and not shut it off completely, this can be done by using a motor-driven rheostat. *Jeffrey Manufacturing Co.*

Please turn to page 118

Here are the INSIDE REASONS why

DENVER SRL PUMPS

• are ideal for high density abrasives...
• for cyclones, classifiers, washers

DENVER SRL PUMPS
cost less, last longer...

...because casing liners and runners are tough rubber, pressure-molded to steel for longest wear, lowest maintenance!

● RUBBER MOLDED TO STEEL

Runners and casing liners are tough, abrasion-resistant rubber pressure-molded to close tolerances over steel skeletons and backing plates. This gives necessary rigidity and provides precision fit of parts for high pumping efficiency. Rubber covered parts last up to 15 times longer than the best hard iron or alloy steel. Means fewer shutdowns...lower maintenance.

● HIGH EFFICIENCY...LOW HORSEPOWER

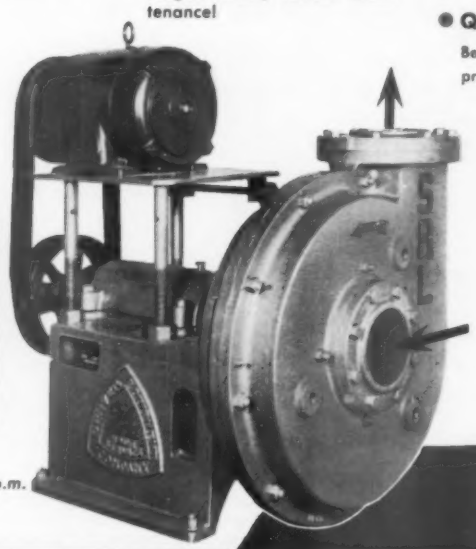
Precision fit of parts and hydraulic efficiency result in savings as high as 50% in horsepower over other sand and slurry pumps.

● SIMPLE CONSTRUCTION

DENVER SRL Pumps have few parts, rugged design. Available in either sealing water type or with mechanical shaft seals, open or closed runner. Also available with alloy metal runners or in special construction for corrosive solutions.

● QUANTITY PRODUCTION MEANS LOW COST

Because of quantity production, DENVER SRL Pumps are now priced low—so low that no operator can afford any pump service less than that of DENVER SRL Pumps.



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PARTS COST LESS, TOO!

Parts cost less and last longer for even greater economy. All DENVER Pump parts are carried in stock for quick delivery. Fast replacement parts service reduces your inventory requirements.

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Here's what you'll see at the NCSA show

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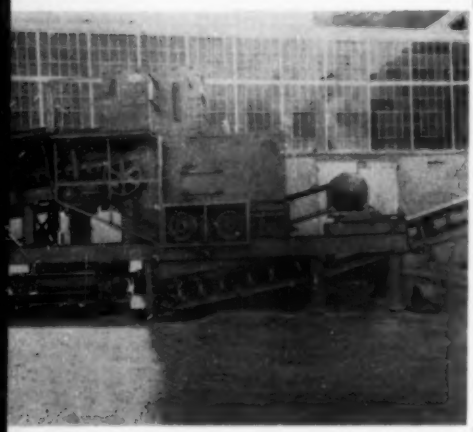
ABOVE: Here's a versatile new drill rig, the Crawlmaster, which can be converted to any of three types: hammer drill, downhole or rotary. Drilling 4 to 5-in. holes as a hammer unit, and up to 6½-in. holes as a downhole unit, the Crawlmaster has several valuable features. Included are hydraulic feed, centralized controls, dozer crawlers and adjustability to drill at all angles from toe-hole to vertical. *Ingersoll-Rand Co.*

LEFT: This portable plant is putting out 200 cu. yd. per hour of road rock from stone reclaimed from Biscayne Bay south of Miami. The 3XC ring impactor and screen produce required fines in one pass. Separate electric drives for each unit are employed. Since the salt water atmosphere is highly corrosive, the maker has used water-tight, dust-tight control panels, motors and starters for long, trouble-free life. *Gruendler Crusher & Pulverizer Co.*



LEFT: The line of "Cuber" impact breakers now includes what the maker terms the world's largest—60 x 72 in. Capacities reportedly range up to 2,000 tph. This design of crusher is gaining favor because of its cubical product, preferred by state highway departments, and because operating cost is quite low in low-silica rock. Photo shows an intermediate-size, double-impeller breaker. *Kennedy Van Saun Manufacturing & Engineering Corp.*

RIGHT: Improvements to this line of excavator-cranes are numerous and reportedly mean a sturdier, more useful machine. New features for 1960 on the crawler-mounted Type 43-M, pictured, include: (1) conical adjustable hook rollers, mounted on tapered roller bearings, for faster and smoother swing, (2) wider clutch and brake housing for smooth, positive control, (3) full revolving fairlead, mounted on tapered roller bearings and (4) split lagging for increased job adaptability and easier maintenance. *Marion Power Shovel Co.*

ABOVE: This rotating cage disintegrator is popular for making fines, such as in agricultural limestone operations. A recently popular use is the breaker's adaptation to breaking down soft, deleterious materials found in harder, sound aggregate materials. The broken, soft fraction is then removed by classifying equipment. *Stedman Foundry & Machine Co., Inc.*

Please turn to page 120

a million yds. a month...

moved by Euclid "Twins"

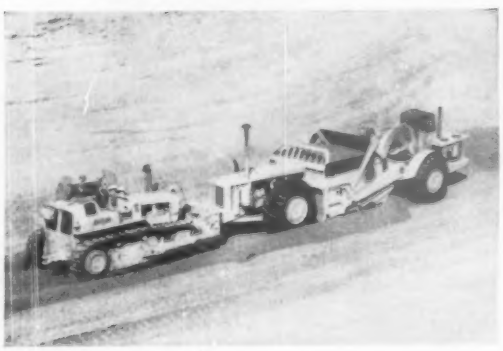
At a mining operation in central Wyoming, a fleet of 18 Euclid scrapers is removing overburden from uranium ore at a rate of a million cu. yds. a month... nearly 21 million cu. yds. will be moved to uncover the ore body. It's a big, tough job to move that quantity of heavy sand over a mile of adverse grades up to 12%.

Maco Construction Co. of Rawlins, Wyoming, contractor on this stripping project, bought 12 Twin-Power "Euc" Scrapers of 24 yd. struck capacity to maintain high speed production. With two engines and all-wheel drive, these scrapers have the power and traction needed to move big loads up steep grades from pit to dumping area. Twin-Power is paying off in the big performance of Maco's five TC-12 Euclid crawler tractors, too—they're used for push loading this all-Euclid fleet of scrapers.

Wherever big tonnages must be moved on mine, quarry, industrial and heavy construction work, Euclid equipment provides more work-ability and better return on investment. The dealer in your area will be glad to supply facts and figures on Euclid rear-dump and bottom-dump haulers, scrapers, crawler tractors and front-end loaders.

EUCLID Division of General Motors, Cleveland 17, Ohio

Big power and big capacity pay off in big production... Euclid TC-12 Crawler Tractor has 2 engines that deliver 425 net h.p.... "Twin" Scraper of 24 yd. struck capacity also has 2 engines (563 total h.p.) and all-wheel drive with separate Torqmatic Drives for each axle.



GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Here's what you'll see at the NCSA show

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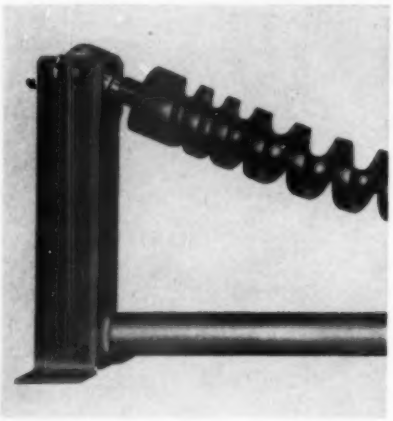
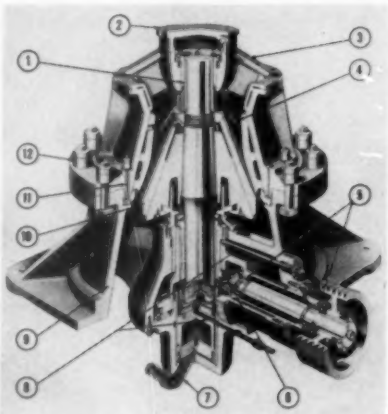
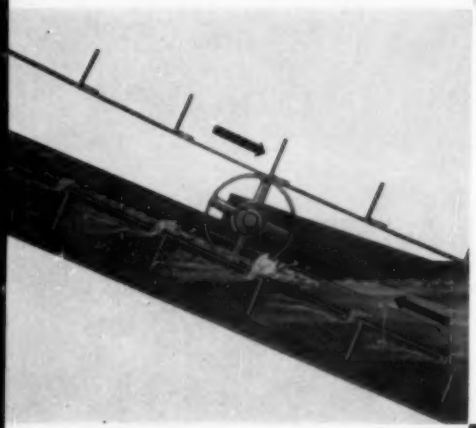


RIGHT: This new Hydrocone crusher, a 36-in. model, features instantaneous hydraulic adjustment for wear and product size. Automatic hydraulic release of tramp iron is also provided. Because it is only 4 ft. 10 in. high, the crusher can be mounted on portable plants. Features to boost life include ball bearings on the pinion shaft and spiral bevel drive gears. Bridging at discharge or of feed is minimized by new flared-bottom shell and a spider at the top which has only two arms. Three crushing chambers offer versatility. Coarse (7-in. feed opening; ½ to 1¼ in. close-side discharge opening); intermediate (4-in. feed; ¼ to ¾-in. discharge), and fine (2-in. feed; ⅛ to ⅝-in. discharge). *Allis-Chalmers Manufacturing Co.*



ABOVE: A new type of belt-conveyor idler and a railroad-car spotter will be on display at this firm's booth. The idler is essentially a piece of wire rope to which is bonded a spiraling surface made up of synthetic rubber. Advantages claimed: constant flexing (bearings only on the two ends) gives self-cleaning action; it conforms to off-center loads and it has torsional strength because rubber spiral is continuous—nothing can break loose. The new car spotter, available in 5 and 7½-hp. sizes, neatly reels up the wire rope on a drum as pulling progresses. This eliminates the safety hazard of car spotters that allow the rope to coil up at the operator's feet, says this manufacturer. *Hewitt-Robins Inc.*



LEFT: This Overdrain classifier, on the market only 18 months, is a belt-type, wet classifier reportedly giving a very clean sand discharge and excellent desliming. Lifting flights attached beneath the belt, together the sides of the classifier, form a series of closed compartments. The only outlet is through overdrain holes in the belt above. Slimy water is discharged through the holes, leaving a cleaner sand product. The manufacturer claims that the Overdrain unit may be used wherever screw or rake-type classifiers are used, is simpler and requires less than half the power. *Hardinge Co., Inc.*

RIGHT: The versatility of tractor shovels is being displayed most forcefully by the big new units (4 and 6-cu. yd. buckets) produced by this manufacturer. Case histories indicate that the 4-cu. yd. Model 275A can replace bulldozers, clamshell and dragline cranes, and even swing shovels in quarry work. At one limestone plant, the 262-hp. model: (1) replaces two smaller dozers in charging a pugmill, (2) replaces two 1½-cu. yd. shovels loading out of stockpile, (3) can replace crawlers in pushing up recently shot rock in the underground mine, (4) can replace both shovels and rear-dumps in moving shot rock from mine face to primary crusher (located in the mine) and (5) can do a better job of room cleaning than swing shovels. *Clark Equipment Co.*

ABOVE: The Tornado square impact crusher, reportedly costing only half as much as comparable crushers, yet outproducing them, is available in four sizes with from 25 to 300-tph. capacity. Impeller shoes and breaker plates are said to be replaceable by one man and can be changed in less than 15 min. They are made of the most abrasion-resistant materials known, with Brinell hardness of 650. *Werco Steel Co.*

Please turn to page 122

AT LAST

WE'VE SUCCEEDED IN PRE-HARDENING OUR ROL-MAN MANGANESE STEEL WEAR PARTS!

AFTER 37 years of working with Rol-Man (11 to 14%) manganese steel, we've developed a new treatment for this famous work-hardening steel. This is new *pre-hardened* standard Rol-Man steel.*

What's the difference between this new variety and standard Rol-Man steel?

The big thing is that *pre-hardened* Rol-Man steel is harder to begin with. And this is not a one-coat case hardening; it is not created by hammering. New *pre-hardened* Rol-Man steel is *hard all the way through.*

And it still retains Rol-Man steel's unbeatable work-hardening ability.

But because new *pre-hardened* Rol-Man steel is not as soft and ductile as the original Rol-Man steel, it does not share the original's almost complete "unbreakability". However, this new Rol-Man steel is still plenty tough.

Another thing about *pre-hardened* Rol-Man steel is that it stands up better against the eroding, abrasive effect of small, fine, hard, gritty, light materials. It gives you more wear per dollar even on jobs where it handles materials that are so fine and light there is no impact-hardening.

You begin to get the idea? New *pre-hardened* Rol-Man steel can take on the light, abrasive jobs just as successfully as the standard Rol-Man handles the roughest, toughest jobs. This new variety of Rol-Man steel has its own advantages . . . its own particular applications.

So now you have two differently treated forms of Rol-Man steel to select from for every wear part you use. Both with the original 11 to 14% Hadfield formula . . . both hardening as you use them. And if you use both . . . for the jobs each is right for . . . you'll get more wear for the dollar. And, most important, you'll keep your down-time to a minimum.

Interested? Please accept our invitation to visit the Manganese Steel Forge Company booth at both the National Sand and Gravel Association, and the National Crushed Stone shows. It will pay you to get acquainted with Rol-Man manganese steel wear parts . . . both the standard and the new *pre-hardened.*

*Pat. Pending

MANGANESE STEEL FORGE CO.

Richmond Street and Castor Avenue, Philadelphia 34, Pa.

ROL-MAN®
The Wear Resistant Steel

Enter 1481 on Reader Card

Here's what you'll see at the NCSA show

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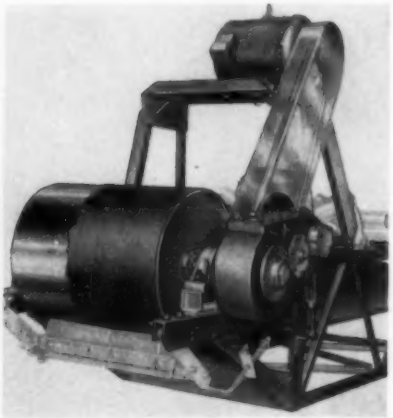


ABOVE: This brand new conveyor drive is simpler and needs less maintenance because of its torque-arm design, announces the manufacturer. Other advantages of the drive are said to be: better balance and accessibility, quieter operation, factory assembly, long-life construction. A wide variety of belt widths and horsepower ranges are available. *Barber-Greene Co.*

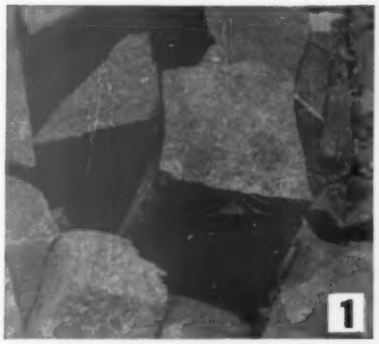
LEFT: Here's a 2-cu. yd. machine that can load out 400 tph. of stockpiled material. That impressive performance is gained, explains the maker, by combining the advantages of front-end loaders with those of swing shovels. The 205 Skooper digs and loads without the usual back-out motion of tractor loaders. Being a rehandling unit, it is less costly than a power shovel of equal capacity. And its swing action drastically cuts maintenance costs of crawler loaders. Finally, operator fatigue and fuel consumption reportedly are cut since only a portion of the unit moves during the loading cycle. *Koehring Div., Koehring Co.*

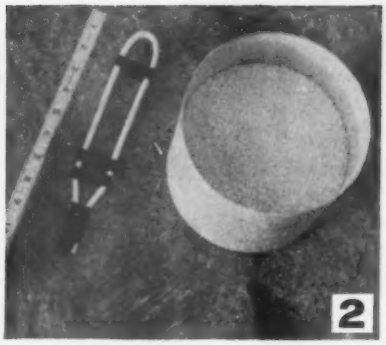
LEFT: Cushioning of the load provided with this Ropebelt conveyor is said to sharply reduce idler shock and belt wear, and to eliminate spillage since the three-part hinged idlers adjust to the load. This flexibility, plus that of the supporting wire ropes, also keeps the belt in training contact, whether loaded or empty, the maker reports. One aggregate producer reportedly has moved more than three million tons of gravel with one belt and no bearing or idler replacements. The 650-ft. conveyor shown moves 450-cu. yd. per hour over a belt only 30 in. wide. *Diamond Iron Works Div., Goodman Manufacturing Company.*

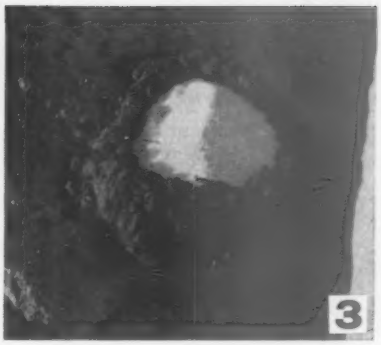
RIGHT: This line of 3 and 4-cu. yd. tractor shovels has design features which increase safety and performance. Typical are: (1) safety curve lift arms, laid out to protect the operator from injury; (2) clear dumping height of 9 ft. and 10 ft. 6 in., (3) four-wheel drive, torque converter and torque-proportioning differentials to put all available power to work. *Yale & Towne Manufacturing Co.*

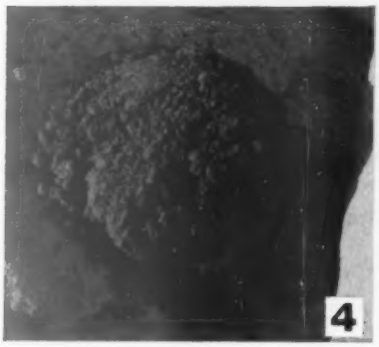
ABOVE: A horizontal or flat-deck screen will be featured at this company's booth. Because of its low head requirements, the design is gaining in popularity, particularly in portable screening-crushing plants. *Smith Engineering Works.*

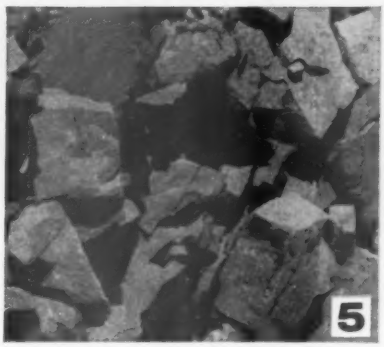
END











1. Basalt boulder prior to blasting.
2. Spencer N-IV and 6% diesel #2 fuel oil plus 20" of 175-grain detonating cord.
3. N-IV-fuel oil mixture being placed on boulder.
4. View of completed "mudcap."
5. Boulder after blast.

"Mudcapping" Now Possible With Ammonium Nitrate-Fuel Oil Mixtures:

Another example of Spencer Chemical Company's continued research in the blasting field

The pictures above show another example of how Spencer research is finding new and better ways for using Spencer N-IV Ammonium Nitrate-fuel oil mixtures in blasting operations. Using the same basic materials and preparation used in blasting bore holes, it is now possible to do "mudcapping" for breaking up large boulders.

The Spencer N-IV Ammonium Nitrate used for each blast is put in an ice cream container and mixed with 6% diesel #2 fuel oil. The material is set on the boulder and dirt is packed around it. The charge is initiated with a loop made from 20 inches of 175-grain detonating cord.

Whether you use Spencer Ammonium Nitrate N-IV and fuel oil mixtures for "mudcapping" or for blasting bore holes, you'll find that Spencer N-IV as an ingredient in blasting agents produces more energy than competitive grades of ammonium nitrate. That's because Spencer N-IV has a special structure that lets the prills absorb oil more easily, and N-IV contains a higher percentage of ammonium nitrate.

Yet, Spencer N-IV Ammonium Nitrate costs you no more than other brands!

Spencer Chemical Company also has available a machine scientifically designed for placement of N-IV-fuel oil mixtures into horizontal blast holes. Called the Spencer Powder Monkey, this unique device eliminates tamping bags, tamping equipment, or the labor needed to fill and tamp bags into the hole.

For complete information, mail the coupon below:

SPENCER®

Spencer Chemical Company
405 Dwight Building
Kansas City 5, Missouri

I want to know more about:

☐ Spencer N-IV Ammonium Nitrate as a blasting ingredient.
☐ Spencer Powder Monkey.

Name_____

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LUBE LOGIC

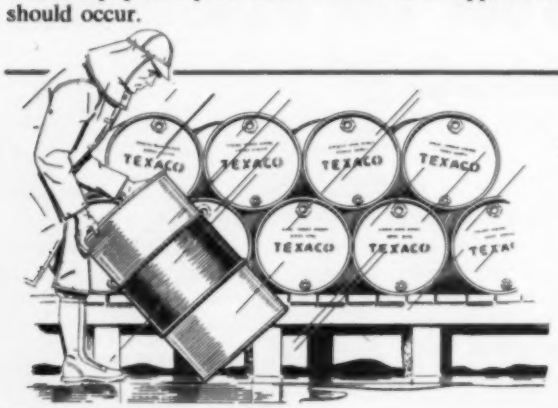
Six tips to

How high is your hidden cost of maintenance?

You may not realize how many extra maintenance dollars you spend when you keep many different lubricants on hand. (Six are often all you need to cover all major maintenance.) You pay extra for inventory. You pay extra for storage and handling. It costs you more in paperwork to order. And you'll have to figure the wasted cost of equipment parts and downtime if misapplication should occur.

The Texaco Lubrication Plan helps you reduce or even eliminate these hidden costs. That's because it provides the minimum number of *proven* multi-purpose and special lubricants, tailored to your job requirements.

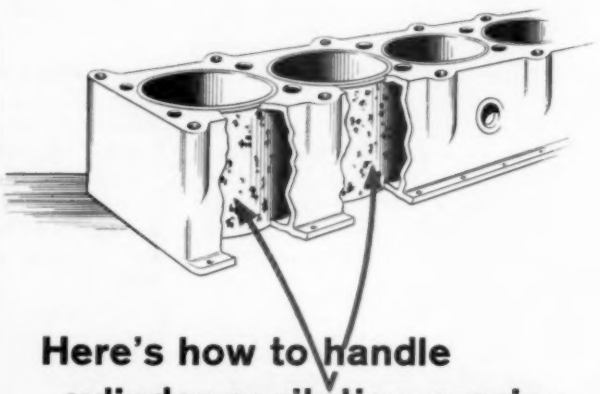
You'll do yourself a favor when you check with a Texaco Lubrication Engineer. He'll carefully plan your lubrication needs—then follow them up to see that your lubrication problems are taken care of fast.



The inside story on outside storage

You're short-changing yourself if you skip these simple precautions: drums stored outdoors should be placed on their sides. When stored on end, expansion and contraction through temperature changes can suck in rain water that collects on top of the drum.

Want to warm up lubricants that have become stiff from cold? *Don't* heat them with an open flame. You might melt the sealing compounds, and the drum will leak. You might also damage the product with too much heat in one spot. Put the drum indoors for a while before using.



Here's how to handle cylinder cavitation erosion

High pressure cooling systems in use in most supercharged diesels are subject to coolant aeration. This aeration can cause cavitation, leading to serious cylinder liner corrosion-erosion, unless a rust preventive is added to the water. A good antifreeze (like Texaco PT antifreeze) will do the job in winter—but in summer a 1% to 2% solution of Texaco Soluble Oil C will do a fine job. (Remember to flush out before you add antifreeze again.)

cut maintenance costs

OIL GAUGES SPEAK A LANGUAGE ALL THEIR OWN

Look to your oil gauge pressure for clues to a variety of potential engine ailments. For example:

LOW OR NONE

1. Oil pump pickup stuck high.

LOW

1. Clogged oil pump screen.
2. Excessive main, con-rod, camshaft or rocker-arm bearing clearances.
3. Clogged full-low filter, if by-pass isn't working.
4. Excessive dilution of oil with fuel.
5. Enlarged squirt holes.
6. Loose connections or cracks in oil line.

LOW OR ERRATIC

1. Faulty oil pump.
2. Restriction in oil pan, or oil too viscous to keep oil pump intake supplied.

LOW OR HIGH

1. Faulty gauge.
2. Ineffective oil cooler depending on type, may keep oil too cold or provide insufficient cooling.

HIGH

1. Oil with viscosity too high for climate.
2. Sludge and contamination in the oil.
3. Clogged oil passages on the pressure side.

HIGH, LOW OR ERRATIC

1. Improper setting or failure of pressure relief valve.

ERRATIC, LOW, THEN NONE

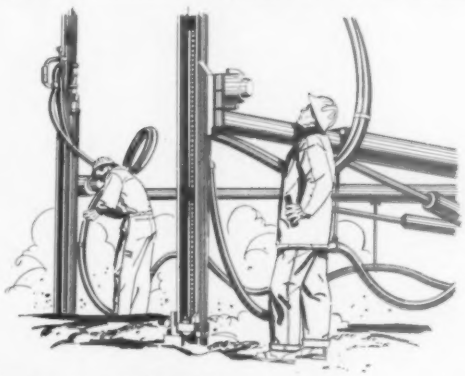
1. Crankcase oil level just at or below oil pump pickup.

NO MOVEMENT OR DELAYED ACTION

1. Clogged line to gauge.

Don't let engines foul up!

If the fuel injector on a diesel drifts off or "dribbles," incompletely burned fuel will contaminate the crankcase. The result will be plenty of smoke—and probably engine trouble. The injector should be fixed immediately—but if it can't be, start shortening drain periods to remove the damaging oil-fuel mixture. Also, use an oil with full detergent and dispersion properties to keep other undesirable products out of the engine.



New product for rock drill couplings

Actually, it's an old friend, Marfak Heavy Duty #2, in a new application. According to the raves from customers who've tried it, the lubricant works better on rock drill couplings than anything they've ever used.

TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Lubrication Engineer is the best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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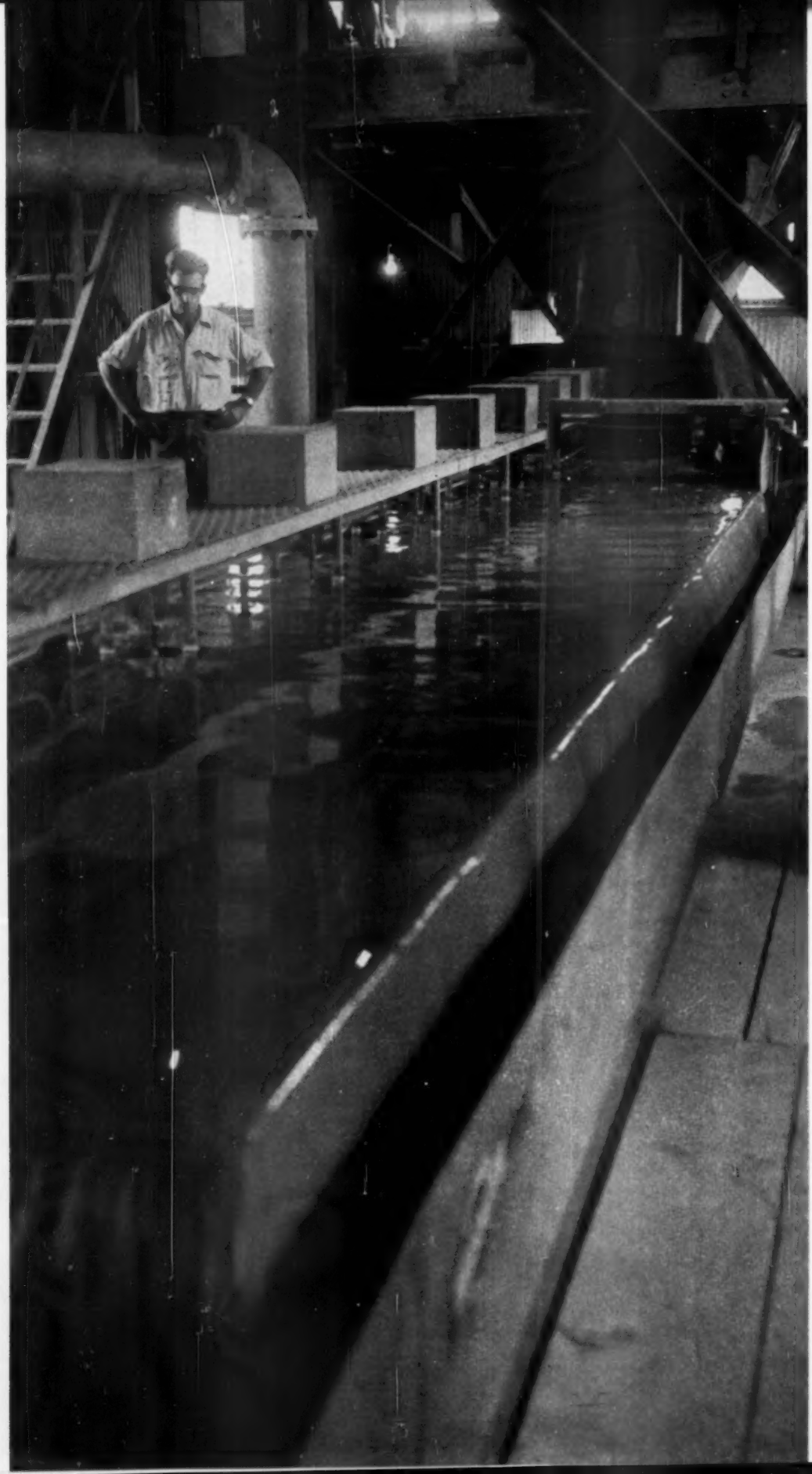


SCALPER, CYCLONE SOLVE FINES RECOVERY PROBLEM

by Kneeland A. Godfrey, Jr.

HOW DO YOU CUT THE COST OF DREDGING your tailings pond, and get more fines from your pit-run sand at the same time?

Many plants use settling or tailings ponds, and they work well in minimizing stream and lake pollution. With federal and local agencies getting tougher on pollution control as supplies of clean water dwindle, every producer who washes aggregates soon will have to face this problem (see ROCK PRODUCTS, June 1959, p. 76).

But settling ponds need occasional dredging, for they fill up with silt and fine sands. This takes a lot of money. In fact, a Cincinnati producer, Ohio Gravel Co., had to spend $75,000 just to dredge its settling areas. It determined to find a way to reduce this expense by reducing the amount of fines going to waste. A second good reason for taking fines from waste water is to save them for use. Asphalt specs. and others are calling for more fines than ever before.

Ohio Gravel found a neat, less costly way to "kill two birds." The firm has been operating a clean, handsome new gravel and sand washing plant at Cincinnati's suburban Newtown for three years now. To save the fines, Vice President Walter Flach designed the sand washing section around a big 8 x 32-ft. sand scalping tank and a 24-in. liquid cyclone. The tank retains more fines than the sand drags it replaces; and the cyclone catches most of the rest down to 200 mesh, if desired.

Formerly the firm used sand drags, with the overflow going to settling tanks. After settling for about an hour, the water was drained from the tanks and the fines then were dumped through a duplex gate to waiting trucks. The setup worked reasonably well but, as the $75,000 dredging bill attests, did not do as good a job as might be hoped.

So three years ago the new plant was built. As well as doing a better washing job, it also doubled capacity—to 500 tph.

Here's the flow setup for the new wash plant. Only minus 1¾-in. material reaches the plant, since larger gravel is scalped off earlier and

Please turn page

LEFT: Long 8 x 32-ft. scalping tank is one-half of Ohio Gravel's two-part solution to its fines recovery problem. Operator Clifford Schauer checks the operation

RIGHT: Liquid cyclone, background, does final fines recovery job at the Newtown plant

SCALPER, CYCLONE SOLVE FINES RECOVERY PROBLEM

continued from page 127

trucked to a crushing plant about a mile away. A big twin-deck scalper, set high atop the wash plant, separates most of the sand from the gravel at 3/16 in. The big scalping tank, set beneath, receives the separated sand. The gravel and fines scalped off go to a big 96-in. Super Scrubber which cleans the gravel and loosens fines remaining.

From the rotary scrubber, this material drops to the final washing screen, a 4 x 12-ft. three-deck unit. Spray bars working here do another cleaning job on the gravel and sand. The last of the sand drops through at this point, joining at the scalping tank that separated out earlier.

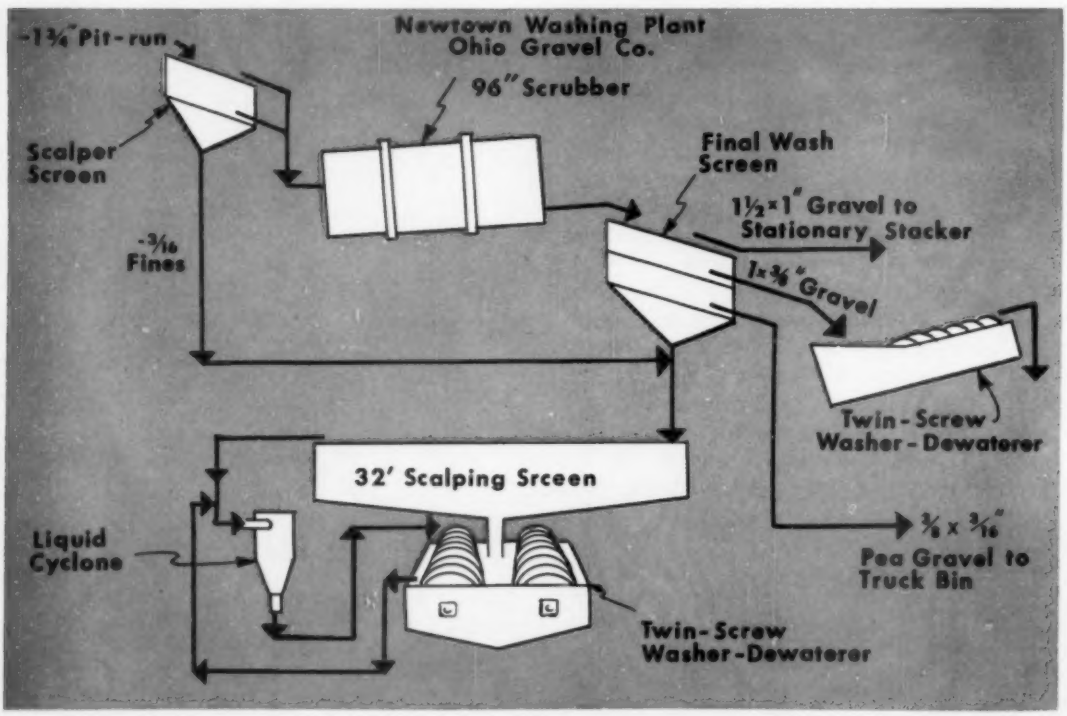
The final 4 x 12 three-deck screen makes four separations. Material retained on the top deck being 1¾ to ⅞ in., goes directly to a stationary stacker jutting out from one side of the plant. The next smaller size, ⅞ to ⅜ in., goes to a twin screw scrubber from which it is discharged onto a radial stacker. The —⅜ to 3/16-in. goes directly to a conveyor leading to a bin for trucking out to stock pile.

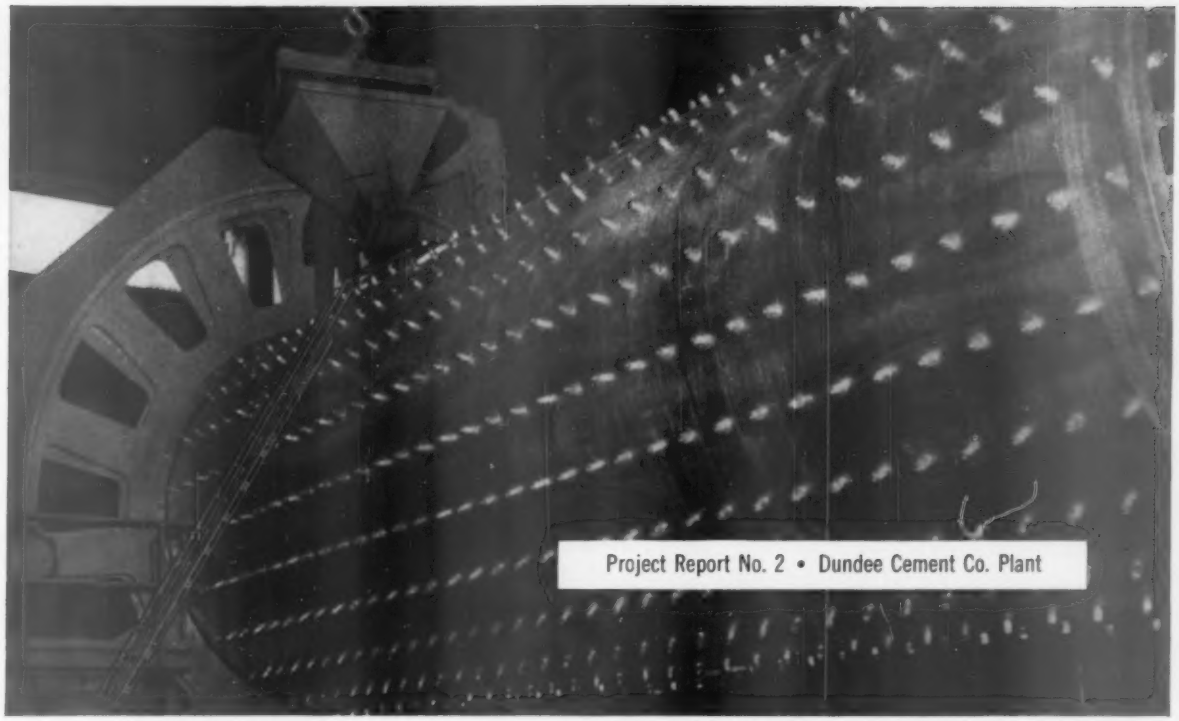
Minus 3/16-in. fines, separated out in these washings in scrubber and rinsing screen, drop to the scalping tank beneath, here joining the fines separated out at the scalper screen. The long 32-ft. scalping tank, with nine discharge valves, removes most of the desirable sand fraction from unwanted silt and wash water. Product separated out here drops down to a twin-screw, 30-in. x 22-ft. sand dewaterer.

To insure that all desired sand fractions are retained, the liquid cyclone is brought into play at this point. Overflow from both scalping tank and sand dewatering screws is pumped to the 24-in. cyclone. Material retained here, now thoroughly washed, joins the clean sand in the screw, and makes the final trip to stockpile. A second radial stacker, like that used for gravel, piles the sand neatly beside the wash plant.

With these seven pieces of equipment—two screens, scrubber, scalping tank, cyclone and two dewatering screws—Ohio Gravel assures itself of maximum fines recovery and a very clean product. As a result, the tailings pond needs cleaning only every so often.

Smith Engineering Works supplied the major equipment, including the Dorr-Oliver liquid cyclone. Operating staff under Mr. Flach includes George Sellars, general superintendent; George Nash, plant superintendent; Howard Lang and Frank Kafka, assistants to plant superintendent.





This huge Nordberg mill, 12′ x 36′, is charged with 200 tons of grinding balls.

WORLD'S LARGEST MILLS— COUPLED TO 2500-hp. MOTORS

Mills were efficiently installed with Darin & Armstrong's 100-ton crawler cranes, saving the cost of using portable A-frames.

The five mills—each coupled to a 2500-hp. motor through one of these massive gears—will produce 5 million barrels of cement a year.

Maximum unit capacity with a minimum construction cost is the principle under which the engineering division of the St. Lawrence Cement Company designed the Dundee plant.

As a result, Darin & Armstrong found itself faced with the problem of handling mills and kilns larger than any that had ever been used before.

They solved the problem with new techniques and thorough planning, and today the project is right on schedule, *without overtime.*

This picture report covers the mills.

(For Project Report No. 1 see Nov., 1959 issue.)

DARIN & ARMSTRONG, INC.

GENERAL CONTRACTORS

Chicago 38, Ill. DETROIT 38, MICH. Cincinnati 18, Ohio

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Material: *iron ore pellets from Mesabi*

Rubber-tired machines

From a distance it looks like any other stockpiled material. Then you come close and you see this is *something different*. You've heard the name. It's *taconite!* Round pellets, varying from a half-inch to three-fourths inch in diameter, blue-gray in color, containing about 64% processed iron ore.

When rubber-tired machines can handle such material *successfully*—day in and day out—with rubber's obvious advantages of mobility and no track wear—that's real news for maintenance-minded firms that have almost *any sort* of stockpile problem.

This Minnesota taconite plant has *five rubber-tired Michigans.* These include a 2¼ yd Model 175A, a 2¼ yd 125A, and two 1¼ yd 75A Tractor Shovels . . . and the 262 hp Model 280 Tractor Dozer pictured. The Tractor Dozer exemplifies Michigan advantages . . .

Advantage No. 1—Tire Life

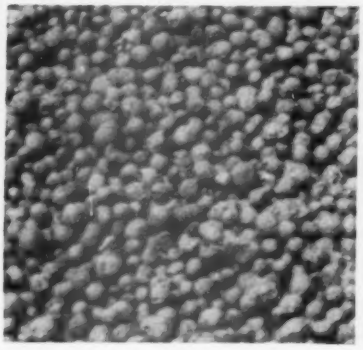
This 56,000 lb machine started work about a year ago. To date, its tires show virtually no wear. The machine does a variety of jobs. For example . . .

Advantage No. 2—Mobility

1. Levels the multi-million ton taconite pellet stockpile. Unit works on 2-to-1 and 3-to-1 slopes, has surprised men on the job with its ability to climb steep grades on loose footing.

2. Cleans around the 10-yard pellet-loading shovel. Major advantage in this operation is how Michigan's low-pressure tires don't crush the pellets

This is processed taconite ... loose, heavy pellets.



Rubber-tired Michigan proves ideal for handling.

Rig works steep grades, compacts without powdering.

Range taconite—abrasive, heavy

the only practical solution

. . . a real problem with crawlers.

3. Maintains haul roads.

4. Tows disabled trucks.

5. Cleans up around pellet plant. Unit gets to this assignment, 2 miles away by road, at speeds up to 28 mph, travels under own power without waste of lowboy loading or unloading, does no damage to railroad tracks or blacktop paving.

6. Cleans under loading pocket. Here, operator dozes normally until he accumulates load. Then he hydraulically pivots blade back, lifts material, turns and dumps outside the railroad tracks.

Advantage No. 3—Dependability

Key to Michigan success, however, has been dependability! Entire power train of each machine—torque converter, power shift transmission, planetary axles—is designed and built by Clark, specifically engineered to give more usable power and traction than you've ever seen on rubber. Get the proof of a demonstration. Four Michigan Tractor Dozer models—162 to 600 hp—eight Michigan Tractor Shovels—16 cubic feet to 6 cubic yards—to choose from. Also a full line of Tractor Scrapers . . . 10½, 19 and 29 cubic yards.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

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Benton Harbor 2, Michigan

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Canadian Clark, Ltd.
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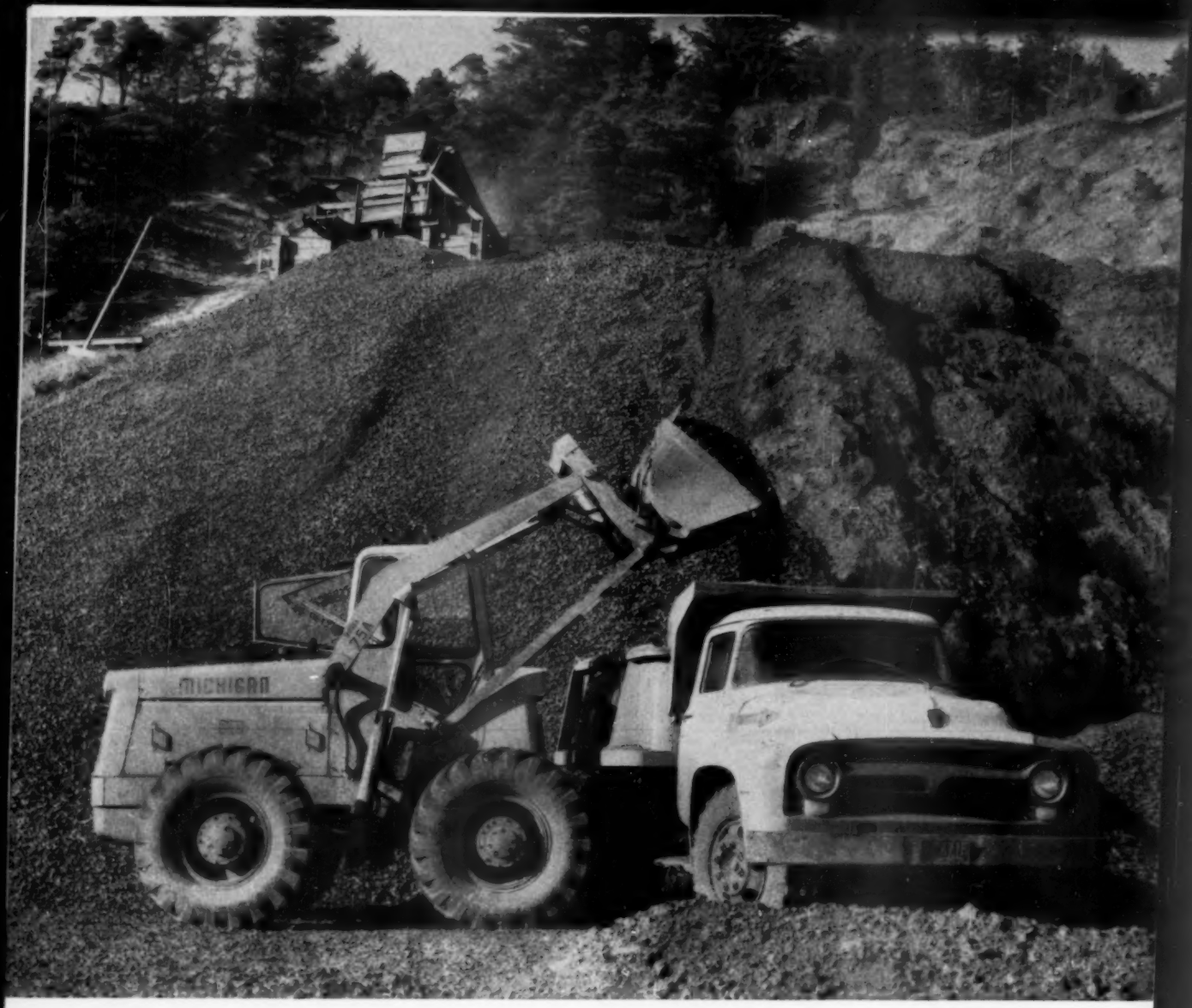

In 5 years, 1½ yd Michigan loads 450,000 yds of rock. Yet...

REPAIR COSTS TOTAL $82.85

In studying most efficiency reports, you have to remember one extremely important fact: that the data given usually cannot legitimately be applied to machines now available. Changes galore—for good or bad—have been made since the veteran unit was built. That is why this report seems to us so significant. The Michigan Tractor Shovel described is in every important component EXACTLY like the Michigans made today. In fact, all 12,000 Michigan Tractor Shovels built have been like the first one—a tribute to the efficiency of design and efficiency of their all-Clark designed and built power trains.

For the past five years, Yaquina Head Quarries, Newport, Oregon, has used this Model 75A Michigan Tractor Shovel 6 to 8 hours a day, 5 days a week, truck-loading crushed rock. The machine has handled over 450,000 yards of material, ranging in size from ¼" to 4" minus.

Its only downtime in all these months has been for changing points and plugs, and for replacing two brake cables, two hydraulic hoses, and the bucket edge.

The work took less than six hours and parts cost exactly $82.85.

For this superb record, credit belongs partially to excellent machine design and construction . . . partially to Plant Supt Virgil Landess' insistence on a simple, regular, preventive maintenance program. The Michigan is greased every day. Rear end and torque converter are checked twice a week. Oil is changed every 40 hours, filters every 80 hours, and a one-hour maintenance check made every two weeks.

"Cheap insurance for keeping an excellent machine excellent," says Quarry Owner Roy Sawyer.

Stock-piles at the Yaquina Head quarry are located in a quarter-mile semi-circle around the crusher, on two levels. Good brakes, excellent visibility, 26 mph speed, fingertip power steering combine to cut travel time between loading locations.

Material—after shooting, secondary shooting, crushing, and normal 2½-to-1 swell—weighs 2600 to 2800 lbs per yd. Mostly basalt, tests show a very small percentage of iron in the rock. Assays have picked up gold, too—80c worth per ton.

Steep 20% grade between stockpile levels proves no problem for the powerful four-wheel-drive Michigan—even in wet weather.

Among the many odd jobs done by Yaquina Head's quarries mobile Michigan Tractor Shovel: moving a 4,000 lb crusher head.

Loads typical truck in one minute

The 80 hp Michigan speeds all kinds of scattered assignments. It lifts crusher heads, for example. Picks timbers. Sets motors. But mostly it loads trucks. "Everything from pickups to 15 yard semis with 8 ft high sides," describes Owner Sawyer. A typical 5 yard truck is loaded in four bucket-fulls. Time: 1 to 1½ minutes.

Reduces truck waiting time 80%

Fast loading—plus fast travel between the nine stone stockpiles—has cut truck waiting time to practically zero. "In the old days—when we handled loading with a ¾ yard rubber-tired machine of another make—trucks often had to wait 10 to 15 minutes each for loading service," remembers Mr. Sawyer. "That old machine couldn't load out more than 250 yards a day. Our Michigan easily loads 400 to 500 yards a day. And it *has* loaded as much as 835 yards (in 8 hours)."

Eight models now available

How do your production requirements compare? If they're the same (or less), your most economical bet for the job probably would be a Michigan 1¼ yard all-wheel-drive model (like the machine described here). For greater output, you have a wide choice of bigger machines: with 1¾, 2, 2¾, *and the new 4 or 6 yard buckets* (standard SAE measure). For clean-up around crushers and belts, there's a 16 cubic *foot* size and a 1 yard size. Eight standard models in all. See your Michigan Distributor for details.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2481 Pipestone Road
Benton Harbor 1, Michigan
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CLARK® EQUIPMENT

Sharp-pencil economy develops spectacular belt conveyor system

by Elwood Meschter

IDEAL CEMENT CO.'S AMBITION to create the most economical and efficient materials-handling system for its Ada plant resulted in one of the most spectacular belt-conveyor systems in this country. This $3.5-million installation spans the 5½ miles between the quarry and the new cement plant to transport Ferndale limestone and Sylvan shale at a rate of 1,000 tph.

It takes many superlatives to describe the 36-in. conveyor system. Covering 5½ miles, it is the longest permanent belt-conveyor system in the country, if not in the world. One of the seven sections is a belt conveyor with 11,766-ft. centers—2.2 miles. This unit may well be the longest single belt conveyor in existence.

But the bold plan of the entire installation was merely the inevitable result of economic analysis and engineering design. The studies indicated that the conveyors, though high in first cost, would be less expensive in the long run than any other type of haulage. The only trucks now used are the seven units which bring limestone or shale the short distance from the quarry shovels to the primary crusher.

Clean-cut simplicity characterizes the entire system. The conveyors are operated by one man at the control panel in the cement plant. But the simplicity was achieved with a complex of auto-

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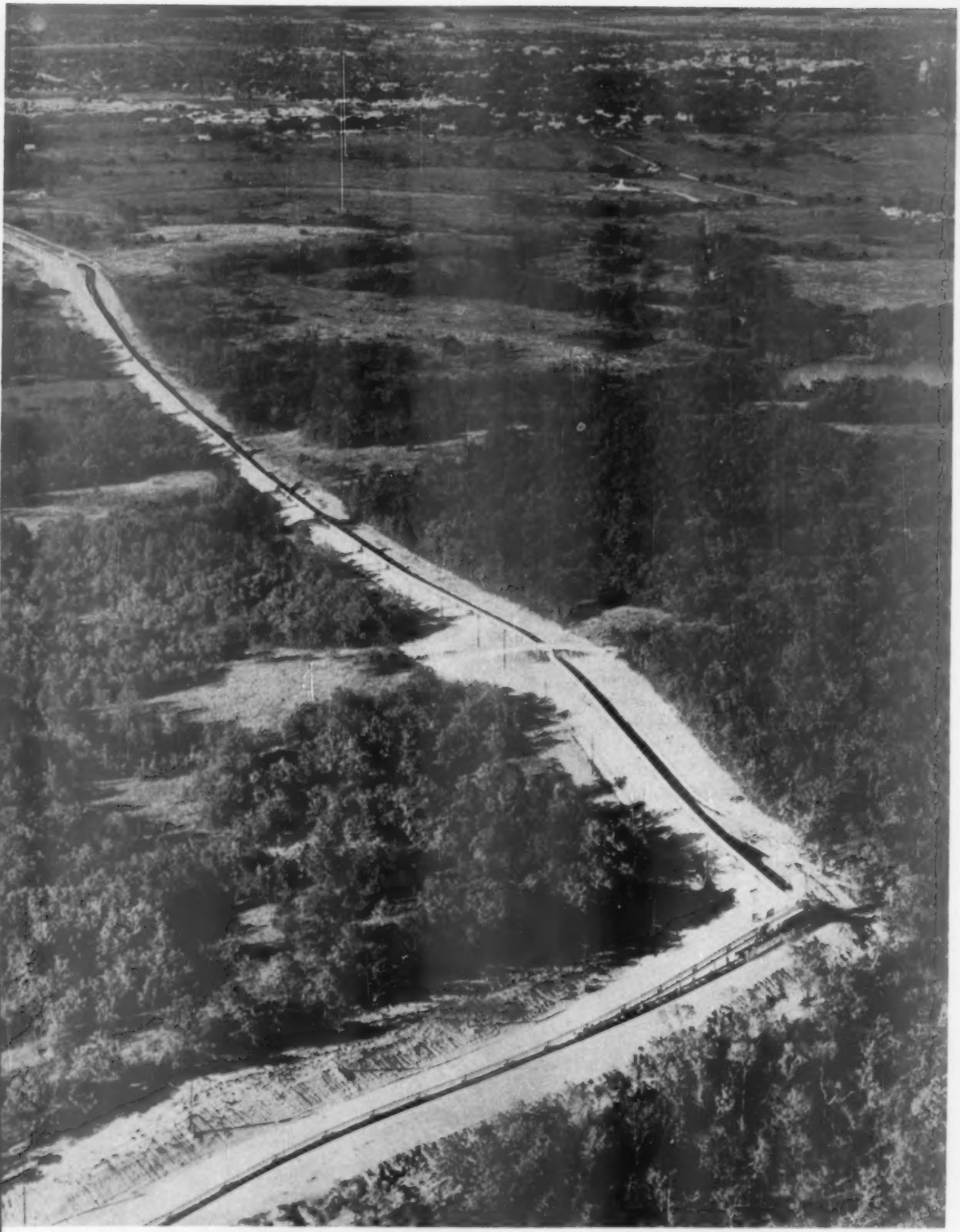

THE GIANT TRANSPORTATION SYSTEM sprawls across the Oklahoma countryside to bring crushed limestone and shale 5½ miles to the cement plant. Belt conveyors were placed along the easiest grades to minimize power requirements and construction costs

SHARP-PENCIL ECONOMY DEVELOPS SPECTACULAR BELT CONVEYOR SYSTEM

continued from page 135

matic controls. Basic idea was to insure one-man operation, yet to protect the costly belt and machinery against every conceivable hazard under every possible operating condition.

The crushing plant at the quarry is almost as exciting as the haulage system. It is so efficient that the raw-materials-preparation system need be run only on a five-day, 40-hour-per-week schedule. Limestone is processed four days a week, when it is put through the full cycle of crushing, screening and pulverizing to minus ¾ in. Shale is handled one day a week. It is reduced to minus 6 in. and goes directly to the belt-conveyor system, bypassing screens and secondary impactors.

Primary crusher is a 53 x 60-in. double-impeller impactor. It is fed with a 5 x 25-ft., manganese-steel apron feeder at rates between 350 and 1,250 tph. The 70-ton capacity truck hopper above the feeder can hold the contents of three 22½-ton trucks. A small flight conveyor under the apron feeder picks up fines and dribble and returns them to the system. All material is taken to a transfer tower on a 48-in. inclined belt conveyor.

At the transfer tower all shale is dropped directly to a secondary belt conveyor which loads the surge hopper ahead of the belt transport system. The 1,000-tph. flow of limestone is split at the transfer tower between two parallel, identical systems. They start with two 48-in. inclined belt conveyors, each of which discharges limestone to a pair of 6 x 12-ft., single-deck vibrating screens. Oversize is dropped to an impactor, and the crushed stone conveyed to the transfer tower for another pass over the screens.

Through-screen rock is collected on flat belt conveyors and put on the 48-in. secondary belt conveyor. All materials for the cross-country conveyor system are put through a 400-ton concrete surge bin. A 4 x 10-ft. apron conveyor under this bin meters materials to the first conveyor in the system for the long trip to the cement plant.

Table I

Belt No.	C to C length (ft.)	Motor hp.	Belt Speed (fpm.)
1	1,598	150	478
2	4,281	150	470
3	11,766	300	512
4	4,498	250	447
5	2,981	75	490
6	2.922	150	474
7	550	2 sp. 100/33	490

Table II

Belt No.	Coasting Dist. (ft.)	Coasting Time (sec.)	Starting time (sec.)	Travel time on belt (min.)
1	24	6.2	30	3.34
2	54	13.8	90	9.11
3	100	23.5	240	23.05
4	115	30.9	90	10.04
5	145	35.5	60	6.07
6	160	40.5	60	6.14
7	180	44.1	20	1.13

Capacity of the transportation system is about 1,000 tph. It is made up of seven belt conveyors ranging from 550-ft. centers to the 2.2-mile-long unit. Table I gives the actual centers for each conveyor, starting at the quarry end. While average speed is about 500 fpm., actual belt speeds range between 447 and 512 fpm. In its course across the Oklahoma countryside, the conveyor system

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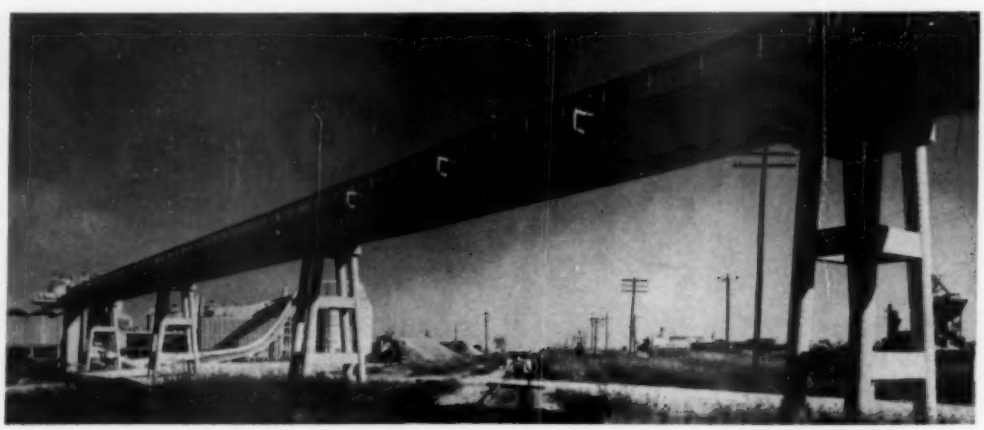

THE LONG CONVEYOR overcomes a major obstacle in its course as it spans the mainline of the Frisco railroad. Design of the 550-ft.-long bridge posed the most difficult design problem in the conveyor haulage system

E-M-pioneered Incher provides quick, safe spotting of mills. It turns mills literally inch-by-inch to desired position merely by pushing a button. One E-M Incher Control can be used to spot several mills.

At Carbon Limestone Company...

"E-M INCHER SAVES US $1,600 A YEAR"

... cuts starter maintenance by over 90%

● At Carbon Limestone Co., Hillsville, Pa., a limestone pulverizing mill must be stopped and spotted every four hours for lubrication. Spotting formerly took about 15 minutes and was done by "jogging" (flicking the starting switch to give the mill a momentary jolt of power). This slow, "hit-and-miss" method resulted in frequent production halts for repairs to the overworked starting system.

To remedy this situation Carbon Limestone installed an E-M Incher. Result: Push-button spotting requiring only *one minute.* In the words of General Superintendent U. F. Masson:

The E-M Incher ... *"Increased productive hours of pulverizing mill 30 minutes in each 8 hours or 6¼%. Reduction of maintenance of starting equipment 90%."*

The E-M Incher can save you big money, too, if you are now using one of the old, time-consuming methods of spotting synchronous motor driven mills.

Write the factory now for complete information about the Incher, and call your nearest E-M Field Engineer.

This mill at Carbon Limestone Co. is quickly positioned by the E-M Incher Control shown in the large illustration.

E-M

3100-TPA-2181

ELECTRIC MACHINERY MFG. COMPANY
MINNEAPOLIS 13, MINNESOTA

Specialists in making controls do
EXACTLY WHAT YOU WANT THEM TO

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W!

NSGA
NATIONAL SAND AND GRAVEL ASSOCIATION
44th ANNUAL CONVENTION

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION
30th ANNUAL CONVENTION

Biennial Show

CHICAGO • FEBRUARY 15-19, 1960

- **ONE SHOW SO BIG IT COVERS THE COLISEUM AND CONRAD HILTON.** (Free, fast 2-way bus service between.)
- **ACRES OF NEW IDEAS** to benefit your business.
- **SHOW DAYS:** Monday and Tuesday, February 15-16, are Show days. Show continues Wednesday, closes Thursday.
- **CONVENTION DAYS:** Wednesday, Thursday, Friday.
- **GIVES YOU 2 FULL SHOW DAYS** free from Convention meetings.
- **ALL REGISTRATIONS** in Exposition Hall Lobby of Conrad Hilton, starting Friday, February 12. Registration and Show admission free to *producers and users* of sand, gravel and ready mixed concrete.

Come and see . . .

Allis-Chalmers Manufacturing Co., Construction Machinery Div.

Allis-Chalmers Manufacturing Co. Industries Div.

Allison Division General Motors Corp.

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Pick Manufacturing Co.

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The T. L. Smith Co.

Smith Engineering Works

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Stephens-Adamson Manufacturing Co.

Symons Clamp & Manufacturing Co.

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The Thew Shovel Co.

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Union Wire Rope Corp.

The Universal Engineering Corporation

Harry Warde & Co., Inc.

The S. K. Wellman Co.

Werco Steel Co.

Western Machinery Co.

The White Motor Co.

Whiteman Manufacturing Company

Willard Concrete Machinery Company, Inc.

Worthington Corporation

The Yale & Towne Manufacturing Co. Trojan Division

SHARP-PENCIL ECONOMY DEVELOPS SPECTACULAR BELT CONVEYOR SYSTEM

continued from page 136

PRESTRESSED CHANNELS replace structural steel trusses as supports for the belt troughing idlers in the conveyor system. At the same time, the concrete shapes form a protective cover for the belt

changes direction several times to take advantage of the best grades. But since the system follows the general contour of the ground, there is some change of grade on the individual conveyors. Actual grades average six percent, with the steepest grade about 14 percent.

First safety feature was the arrangement to keep the conveyors coasting progressively longer distances in the event of a power failure that would stop all motors simultaneously. Speed-controlled eddy-current brakes working in opposition to flywheel inertia were used to assure stopping in the proper distance regardless of the loading at the time of the stop.

Table II gives coasting time and coasting distance for each of the belts in the system. To insure a power supply to energize the eddy-current brakes in event of power failure, small, single-phase alternators were coupled to the main drive motors.

Starting the system under the worst possible, partial-load conditions brought another set of safety problems. Sequence starting was the answer. Once the button is pressed to start Belt No. 7 nearest the cement mill, the other belts are started one after another. This is achieved with the operation of a tachometer-generator driven from the tail pulley shaft of each conveyor. As the shaft rotation attains 50-percent speed, a relay starts the next motor. This motor starts under no load. Eddy-current clutches are used to control the torque ouput of each motor, thus assuring gentle, positive acceleration control. The eddy-current clutches provide a gradual increase of torque, controlled so as to reach full speed in the proper length of time. This sequence is followed on all flights, until Belt No. 1 starts the apron feeder when it reaches 95 percent of full speed. It takes about 402 seconds to bring the conveyor system up to full speed.

Since it takes nearly an hour for material to travel the 5½ miles from the quarry to the cement plant, the conveyor is designed so it can be stopped each night fully loaded. This condition would occur, also, when stopped due to power failure.

Protective devices stop the system in an emergency. Belt No. 1 is equipped on its underside with a device which senses any projection of more than ½ in. A nail, rod or other penetration on the underside will actuate the switch and stop the belt. Just beyond this switch is a metal detector which detects metal penetrating as well as metal on the belt. The detector marks the surface with chalk dust and stops the belt.

All belts have both head and tail drift switches. If the belt is in contact with one of these switches, it cannot be started. Or, if it wanders off course in operation, the switch will stop the system. The transfer chute between the head of each belt and the tail of the next one is equipped with overflow switches. If material builds up in one of these chutes, the switch stops the system.

A belt slip switch compares the relative surface speed of the head pulley with the snub pulley. If the drive pulley should begin to "slip," or speed up in relation to its snub shaft, the conveyor is stopped. But to reduce the possibility of slippage, the head pulleys are lagged with ½-in. herringbone vulcanized rubber lagging. Snub pulleys are lagged with 1-in. soft rubber to prevent material buildup.

As an additional device to assure safe operation and to prevent whipping or surging of the belts, each takeup is equipped with an overtravel switch. If the motor should grab the loaded belt too rapidly in spite of the operation of the eddy-current clutch and the counterweight on the takeup should strike bottom, the switch will stop the motor.

The motors are equipped with overload and under-voltage relays. The eddy-current clutches have temperature relays which signal the operator in the control room. All of the safety devices show as lights on the panel in the control room, and the

Please turn to page 142

Enter 1443 on Reader Card

Question-1: What's different about Haulpak®?

ANSWER: The LW Haulpak is like other off-road trucks *only* because it has wheels and an engine! Otherwise, its design is completely different . . . for your benefit. For example:

RIDES ON AIR — Other trucks ride on steel springs that need much attention. Haulpak eliminates this major cause of downtime with the exclusive LW HYDRAIR* suspension system. With it, Haulpak *rides on air* . . . the load rides smooth and level on rough roads. You can safely use faster hauling speeds, move more tons per hour. Hydrair also makes possible many other advantages:

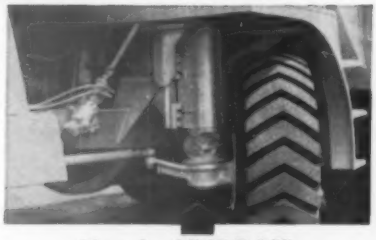
SHORTER TURN RADIUS — Because Hydrair suspension eliminates need for conventional springs and front axles, Haulpak's front wheels can be turned at sharper angles . . . permits U-turns in 2/3rds the space required by competitive trucks. And without need for springs and axles, Haulpak can be built with a shorter wheelbase for more efficient transfer of power-to-wheels. There is, however, no loss in load capacity, because you get the LW exclusive . . .

DEEP "V" BODY — This permits carrying about 6 tons of material *below* the normal floor-line of conventional trucks. It also gives you a lower center of gravity, better stability on turns and steep grades.

HAULS THROUGH DEEP MUD — Haulpak is equipped with the famous LW power-transfer differential. When one drive-wheel begins to slip, power transfers automatically to wheel on firmest footing.

MANY OTHER MONEY-SAVERS! You save on fuel, because Haulpak is built of the newest light-weight high-tensile strength steels . . . to reduce dead-weight and increase pay-load. Also, Haulpak gives you power-shift Torqmatic transmission, full power-steering, multiple-disc brakes with 5,148 sq in. total braking surface, double-acting hydraulic rams that lift body to 70° tilt in 16 seconds for fast dump. And lubrication check is reduced to only 3 easily-reached fittings needing attention only at 500-hr intervals.

Question-2: How does Haulpak save you money?



Here's HYDRAIR

This sturdy, simple air-hydraulic suspension replaces the usual leaf springs found in conventional off-road equipment, relieving Haulpak owners from expensive spring repair and maintenance. Hydrair cushions against loading and travel shocks, compensates automatically for off-center loading, and keeps the load riding level over bumps and holes.

ANSWER: From the answers above you can easily see how this all-new hauler *saves* on hauling costs. Haulpak gives you:

- **greater maneuverability**
- **lower operating cost**
- **lower maintenance**
- **faster hauling**
- **more pay-tons per hour**
- **. . . and bigger profits!**

Next time you need an off-road hauler, investigate Haulpak. Now available in 3 sizes: 22, 27, and 32 tons capacity. Request literature, and ask to see our new LW Haulpak color movie, *"Revolution on Wheels"*.

*Trademark HP-2261-G-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

SHARP-PENCIL ECONOMY DEVELOPS SPECTACULAR BELT CONVEYOR SYSTEM

continued from page 140

system cannot operate unless all the circuits are closed. Single exception is the dust-collector system. These collectors, one for each conveyor, start at the same time as the belts, but the dust-collector motors are not interlocked with the conveyors.

All seven motors driving the belts (totaling 1,175 hp.) are "open-type" motors, but with special insulation not affected by weather moisture, dust or oil. The open type was chosen for this service since it could operate overloaded for longer periods of time than a weather-protected design without exceeding temperature ratings.

Construction details of the haulage system are unusual, too. Prestressed concrete channels are placed flange-down and supported by precast concrete piers mounted on precast concrete footing. Carrying and return idlers are suspended from the concrete channels with 6 in. galvanized steel channels. This arrangement not only is substantially more economical to fabricate and erect than conventional conveyor trusses, but also provides a built-in protection for the material on the belts. Additional wind screens made of corrugated aluminum are bolted to one side of the conveyor.

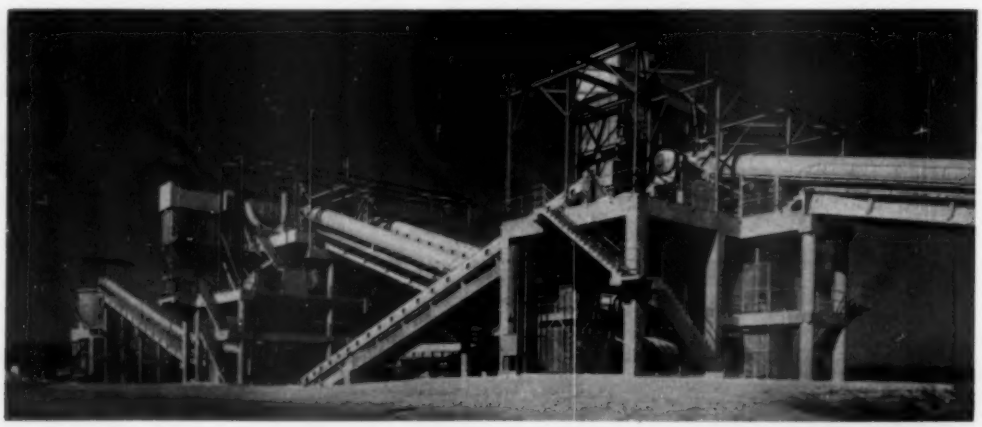
Each prestressed channel is 4 ft. wide and 50 ft. long, with 18-in.-deep flanges to support the 36-in. belt idlers. Lightweight aggregate was used in the concrete channels; 568 units were required to do the job. The last conveyor in the system, No. 7, is above ground its entire length to span the mainline of a railroad. The belt is supported in the longest span of this section with pairs of 97-ft., prestressed I-beams resting on 4-legged concrete towers.

Because of the large surface areas presented to the wind and the need to provide for 100-mph. winds, rather severe reactions could be created in the long beams. So the support towers are ruggedly constructed. Each consists of four round columns braced by three layers of horizontal struts, with the legs battered transverse to the conveyor centerline; each rests on a single spread footing.

At the discharge end of the conveyor system, a stacker deposits shale in a soaking pit. This is the first step in making a slurry of the shale ahead of the shale wash mill. Limestone is taken from the cross-country system by an inclined belt conveyor, and is distributed to one of the six storage silos that hold about 14,400 tons of cement rock.

MAJOR EQUIPMENT REFERENCE

QUARRY AND CRUSHING PLANTS	
Shovels, (3) 2½, 3½ & 6-cu. yd.	Marion Power Shovel Co.
Trucks, (7) 22½-ton	Mack Trucks, Inc.
Apron feeder, 5 x 25-ft.	Pioneer Engr. Div.
Primary impact breaker, 53 x 60-in.	Iowa Mfg. Co.
Secondary impactors	Williams Patent Crusher & Pulverizer Co.
Dust collectors, (5)	Northern Blower Co.
Flight conveyor, 1 x 16-ft.	Link-Belt Co.
Belt conveyors, 36-in. (2), 48-in. (6)	Link-Belt Co.
Vibrating screens (4) 6 x 12-ft.	Link-Belt Co.
Apron feeder, 4 x 10-ft.	Link-Belt Co.
Construction, prime contractor	Martin K. Eby Construction Co.
Consulting engineer	Ken R. White
BELT TRANSPORT SYSTEM	
Design and prime contractor	Link-Belt Co.
Conveyor machinery	Link-Belt Co.
Prestressed channels	Thomas Concrete Pipe Co.
Motors (7)	Allis-Chalmers Mfg. Co.
Eddy-current clutches and brakes	Dynamatic Div., Eaton Mfg. Co.
Belts	The B. F. Goodrich Co.
Dust collectors, (7)	Northern Blower Co.



IT TAKES a high-capacity, highly efficient preparation system to handle over 1,000 tph. of limestone to get it ready for the cross-country belt conveyor system

Enter 1444 on Reader Card

Nearly 700 acres in this quarry

. . . but fast LW tractor works every "corner" of it

At the Keigley Quarry, Payson, Utah, about 700,000 tons of limestone and dolomite are produced per year. On this nearly 700-acre site — owned by the Columbia-Geneva Steel Division of United States Steel Corporation—a LW Tournatractor® handles a wide variety of jobs. This LeTourneau-Westinghouse rubber-tired dozer cleans up around shovels, maintains stockpiles, sometimes strips overburden, pushes railcars, tows compressors . . . and maintains 10 miles of roads!

Travels up to 30 mi per day

One of the main reasons this single Tournatractor can handle *all* these jobs for Keigley Quarry, is its ability to *run* from one assignment to the next. There's no time lost "crawling" between locations. During a normal work day at the big quarry, this 17-mph LW tractor travels a total of 25 to 30 miles.

Maintenance costs for Tournatractor are relatively low, too. The quarry reports, for instance, that in the past year it never had the tires off their rims. LW tractor's 4 big low-pressure tires absorb the shock of rough travel. In addition, with sealed, anti-friction drive, there's no danger of dust and grit entering and damaging moving parts.

Get the rest of the Tournatractor story from your LW Distributor. Let him give you the *facts* on how this 218-hp rubber-tired dozer boosts output and cuts pit costs.

Cleaning up around shovels is one of many jobs handled by this 218-hp LW Tournatractor working at the nearly 700-acre quarry near Payson, Utah. This mobile, 17-mph dozer on rubber saves you cost of multiple crawler-units because of its ability to hustle over a wide area in a few minutes.

CT-2104-MQJ-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Thousands upon thousands of tons of rock were dumped along the base of the earthquake-made dam to form a "stilling basin." Here a Mack LVX dumper adds its load of rock to the river bed.

Crossing and recrossing parts of the trapped Madison River with loads of rock fill—all in a day's work for F & S Contracting Co. and the twenty-odd Mack dumpers assigned to the job.

From the base of one of the huge rock slides these Macks worked back and forth to the river bed on a round-the-clock schedule. F & S Contracting Company of Butte, Montana, owns and operates the big trucks.

Tremendous trucking job is aftermath of

The day the mountain fell

When a devastating earthquake shook a Montana mountainside into the Madison River, it created an earth-moving problem of staggering proportions. The river, trapped behind the huge rockslide, had to be quickly released to prevent disastrous floods. Heavy equipment from surrounding areas was mobilized. In a matter of hours emergency roads had been cut through to the remote quake site, and a crash clearance program was under way.

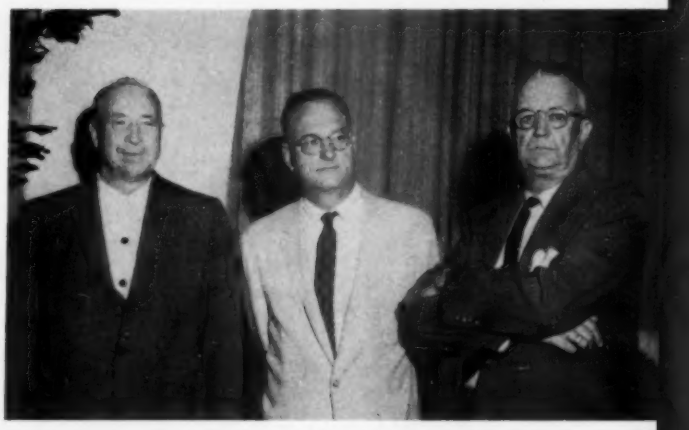
Among the first to get equipment through to the disaster area were crews from F & S Contracting Co., Butte, Montana, with a fleet of heavy-duty Mack dumpers. Day and night on a 24-hour-a-day basis, F & S, veteran of many tough jobs, hustled its Macks through axle-deep mud and water, up almost insurmountable grades and over jagged rock surfaces. Thousands of tons of rock were moved, and F & S reports the Mack trucks detailed to this back-breaking job took it all in stride.

Really tough assignments like this offer indisputable proof of the matchless stamina and dependability built into every Mack vehicle. Unusual or routine, Macks can always be depended on to handle the job efficiently and economically. There's a Mack branch or distributor in your area who will be glad to help you select the model designed to handle *your* important hauling jobs. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

MACK
FIRST NAME FOR
TRUCKS

PROGRESS IN SLAG during 1960 will get top attention from officers of the National Slag Association. Left to right are Edward C. Levy, new vice president; Charles W. Ireland, president; H. N. Snyder, retiring vice president, and W. S. Shaw, treasurer

Slag producers face challenging FUTURE



STEEL COMPANY REPRESENTATIVES attend NSA annual meeting: (left to right) Stewart H. Steffey, U. S. Steel Corp.; Fred Osborne, U. S. Pipe & Foundry Corp., and Hugh T. McIllwain, Bethlehem Steel Company

A RECITATION of the past rapid advances emphasizes only the opportunities that are open to the blast furnace slag industry in the years ahead. "New opportunities and new uses are our challenge for the future," stated Charles W. Ireland, president of the National Slag Association. The occasion for this review was the 42nd Annual Meeting of the group at Boca Raton, Florida, October 28-30, 1959.

Achievements of this section of the aggregates industry are many, considering the fact that only few knew of slag at the turn of the century. Today, the potential output is near 35 million tons annually, dependent upon the extent of steel industry operations.

Looking ahead, Mr. Ireland urged slag producers —95 percent of the industry is represented in NSA —to accept the challenge of dreaming; to search for ways in which this complex chemical structure of material called slag can be employed for the industry's and users' progress in the years to come.

The main retarding factor to production of slag in 1959 was the extended strike in the steel industry. But the industry was not caught entirely short. It depended much on old slag banks as a reserve of raw slag, and even during the strike the industry ground out its important products from this reserve supply, though it was at a rate below normal. Still, depletion of these reserves makes the slag industry more and more dependent upon current output of blast furnace slag. It's natural to assume that slag producers are more than mildly interested in what happens to steel operations after January 26, 1960, when the 80-day cooling-off period lapses.

A major function of the National Slag Association is recognition of slag as an important aggregate in construction specifications. And NSA has had considerable success in the past few years in gaining the recognition it wants. Today, reports E. W. Bauman, managing director of NSA, most specifications—national and local—include slag as an acceptable aggregate. Work of the association and its members is responsible for this acceptance. "There are still certain things we need to do for

Please turn to page 158

"Our 16000 and 21000 diesels have plenty of reserve power, with economy and dependability to boot,"

says S. T. Kimmes, partner, Kimmes-Bartelma Construction Co. of Hastings, Minn. "It's this kind of performance that proves I'm right in specifying Allis-Chalmers across the board."

An HD-16 tractor, powered by a 16000 diesel, pushes sand and gravel to the crushers—these crushers are also driven by 16000 and 21000 diesels.

A 16000 diesel powers this hopper at the pug mill.

21000 — 340 hp
(turbocharged)
16000 — 230 hp

Supplying and placing more than a million tons of subbase material for runways at a new midwestern Air Force base is typical of the jobs handled by the Kimmes-Bartelma Construction Co., Hastings, Minnesota.

Kimmes' aggregate plant shown above turned out 8,000 tons per day. These Allis-Chalmers 16000 and 21000 engines logged over 1,500 hours in three months. The only downtime on this job was due to wet weather.

Why is Kimmes' operation Allis-Chalmers-powered all the way? Because as he puts it: "These engines are in there giving us real performance day in and day out with no strain — in the tractors, on the crushers, and at the pug mill." They deliver the power and torque they are supposed to without overworking. The completely new Allis-Chalmers open-chamber combustion system makes the 16000 and 21000 the most economical, cleanest-running, fastest-starting diesels in their class.

Let your Allis-Chalmers dealer tell you more. Let him refer you to users — find out what they think of these "Performance-Proved" engines. Allis-Chalmers, Milwaukee 1, Wisconsin.

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BC-23

The efficiency of our most modern cement kilns has had an unfortunate side effect: high-alkali cement. Here's a way to overcome this shortcoming and still maintain efficiency

Low-alkali cement from high-efficiency kilns?†

by C. F. Clausen*

DURING THE LAST 20 YEARS, the cement industry has become increasingly aware of the sometimes harmful effect of alkalis on concrete and of the need to manufacture low-alkali cement when it is called for in certain locations. At the same time, there have developed conditions which aggravate the alkali problem and which may even be partially responsible for it, particularly the increasing use of kiln-dust collectors and the development of highly efficient kilns with low fuel consumption and low exhaust temperature.

To bring these three concepts into harmony, I propose a rearrangement of equipment which might eliminate the drawback. Simply, it will do this: withdraw kiln exhausts from a kiln-preheater system at their point of near-maximum alkali concentration and, in their place, introduce hot air from the clinker cooler in order to minimize alkali absorption by the raw materials in the preheater. About 50 percent of the total alkali in the feed would be removed. This applies to any of the several types of systems now in use.

First, an explanation of the situation as it now exists. Kiln dust that is collected in effective dust collectors contains a high concentration of alkalis; and it will, if it is returned to the process, often make it difficult to produce clinker containing less than 0.6 percent alkalis, calculated as Na_2O. If low-alkali cement is called for, it is, therefore, often necessary to haul the dust away, involving an economic waste of some magnitude. Furthermore, the high-efficiency kilns are based upon operation with low exhaust-gas temperatures resulting from effective heat transfer from gases to raw mix and intimate contact between the gases and the fresh kiln feed. Unfortunately, this situation also results in intimate contact between the alkali-rich exhaust and the raw materials.

Many studies of methods and procedures for increasing alkali volatilization in the kiln proper have dealt with this problem and have pointed to the effect of soaking temperature, soaking time, kiln loading and clinker size. To a large extent, these studies indicated a degree of futility in improving alkali volatilization in kilns if the dust, containing alkali, is collected and reused.

A closer look at a modern dry-process kiln will illustrate the aforementioned points. Fig. 1. is a highly schematic diagram of a high-efficiency kiln with a conventional air-quenching cooler, which may be any of several types now in use, such as: the Fuller grate cooler, the Allis-Chalmers vibrating cooler or the Smidth horizontal grate cooler. The preheater shown is an ACL traveling-grate system, but the conditions relating to heat transfer and alkali absorption also would apply to the Fuller-Humboldt suspension preheater, the Smidth calcinator and others.

The counter flow system of heat transfer is well known. The pelletized raw mix enters the kiln system at the left; it is conveyed through the preheater on a slowly traveling grate which is followed by a short rotary kiln and a clinker cooler. The hot combustion gases from the kiln first pass downward through the heating section of the trav-

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*Director, Manufacturing Process Dept., Portland Cement Association, Skokie, Ill.

†*This proposal was presented at the fall regional meeting of the General Technical Committee, Portland Cement Association, Milwaukee, Wis., September 21, 1959.*

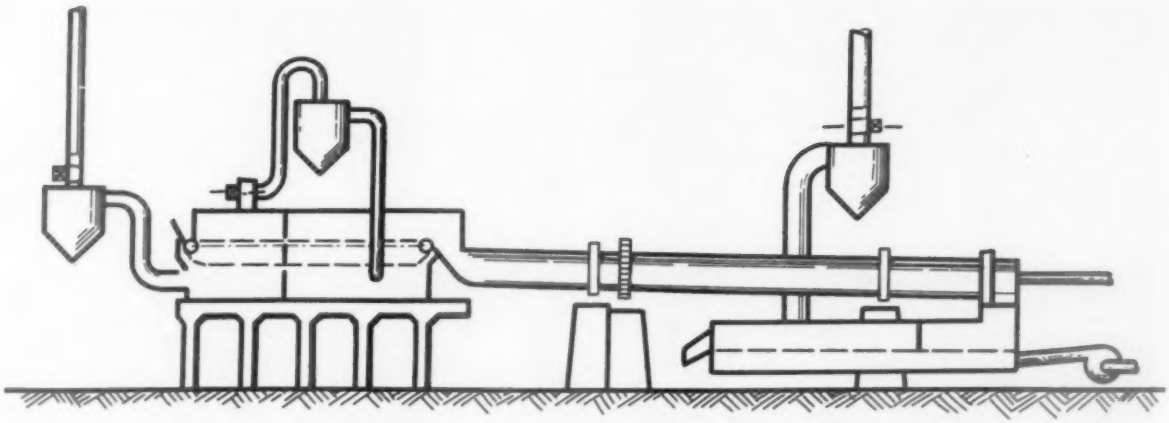
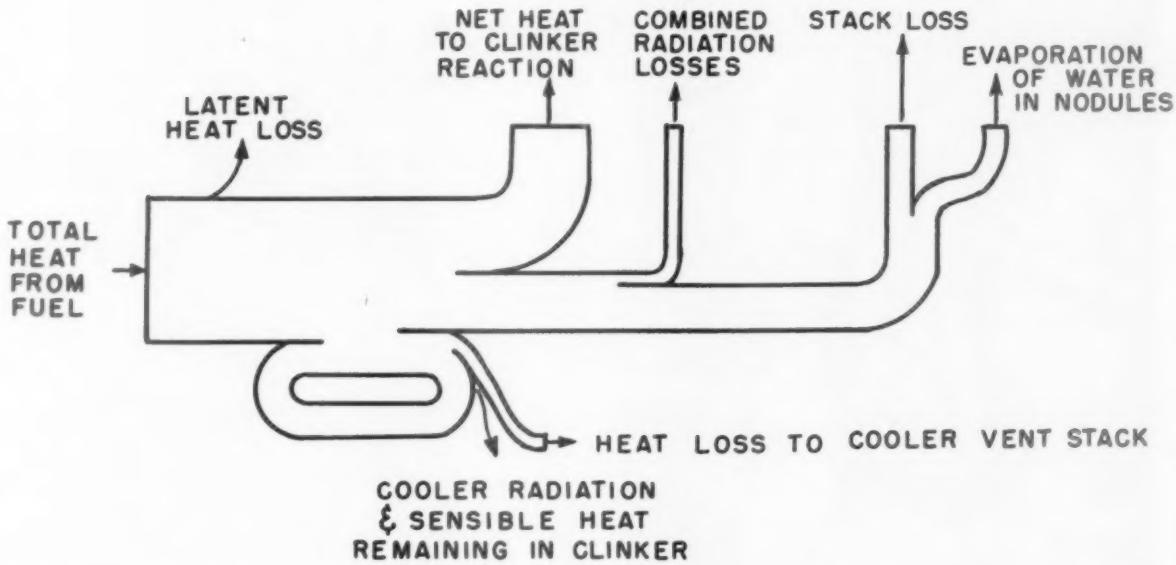


FIG. 1—Conventional arrangement of kiln with air-quenching cooler and traveling grate preheater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COMBINED RADIATION LOSSES
STACK LOSS
EVAPORATION OF WATER IN NODULES
LATENT HEAT LOSS
TOTAL HEAT FROM FUEL
HEAT LOSS TO COOLER VENT STACK
COOLER RADIATION & SENSIBLE HEAT REMAINING IN CLINKER

FIG. 2—Heat balance diagram for conventional arrangement of kiln with air-quenching cooler and traveling grate preheater

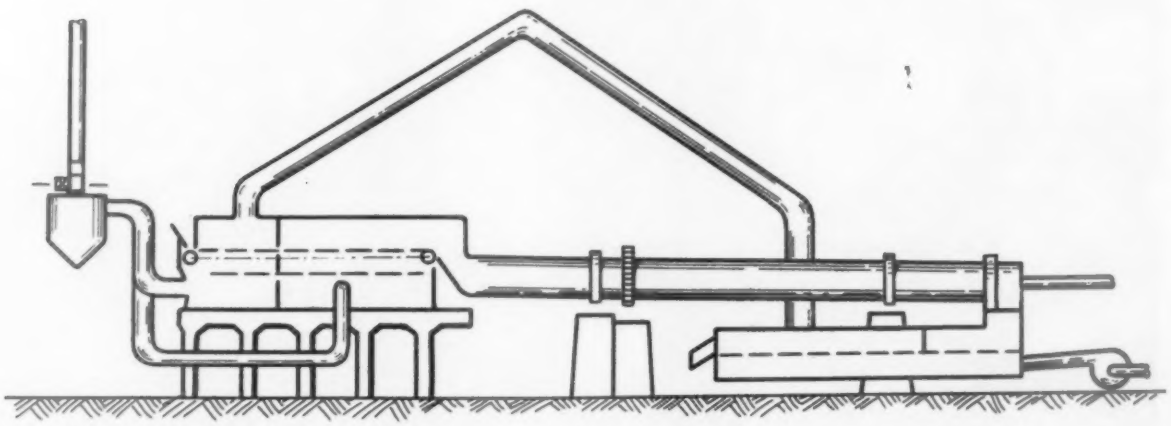
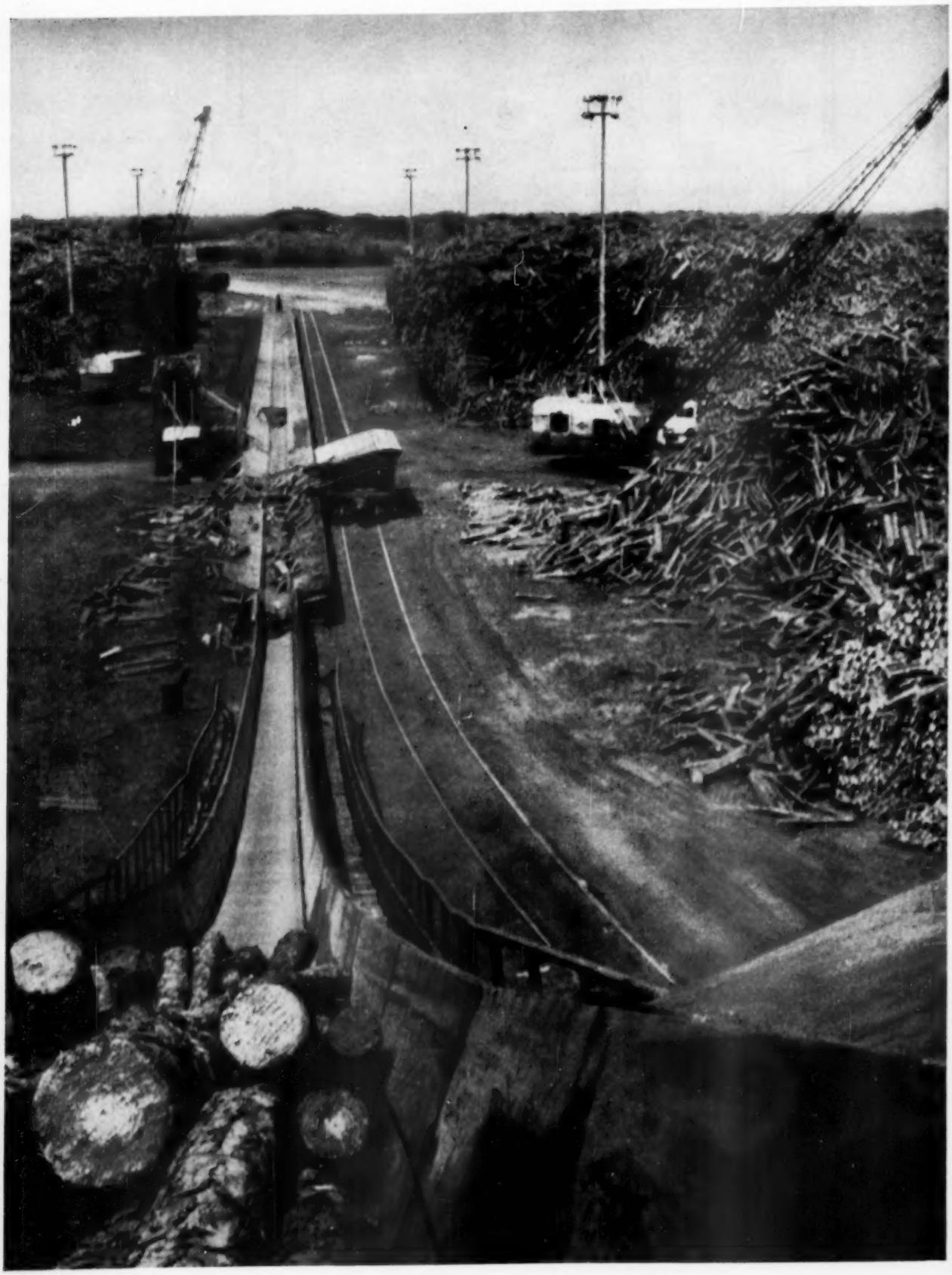


FIG. 3—Proposed arrangement of kiln, air-quenching cooler and preheater



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continued from page 149

eling grate; then they pass through a dust collector for removal of coarse dust (and some alkali). Finally, the gases make a second pass downward through the drying section of the grate. The cool gases under the drying section pass through a dust collector and on to the stack.

The position of a partition wall in the preheater determines the length of time that the pellets are exposed to the kiln gases in each of the two passes. In the same manner, the position of a partition in the cooler regulates the amount of preheated air entering the kiln as secondary combustion air and the amount that is wasted. The cooler-air that is not used in the kiln must pass through a dust collector, since the coarse, gritty, clinker-cooler dust may be viewed as highly objectionable in and around a cement plant.

Kiln systems of this type have obtained a very fine fuel economy as well as an effective dust adsorption on the moist pellets in the drying section of the preheater. Unfortunately, the second pass also provides an opportunity for an effective transfer of alkali fumes or microscopic alkali crystals from the gases to the moist pellets. The feature that is responsible for the excellent fuel economy will thus, at the same time, increase the alkali circulation in the system.

Three dust collectors are incorporated in the arrangement shown in Fig. 1: (a) one for the cooler-vent stack; (b) one for cleaning the gases between the first and second pass in the preheater, and (c) one for the final kiln-exhaust gases. The clinker dust from the cooler contains no more alkalis than the finished clinker, but the intermediate dust (b) and the final dust (c) may be so high in Na_2O and K_2O that it is inadvisable to return them to the process. However, even if the dust from these two sources [(b) and (c)] is discarded as a waste product, it still may be difficult to manufacture low-alkali cement because of alkali absorption by the moist pellets.

Fig. 2 shows diagrammatically a heat balance for a system such as illustrated in Fig. 1, indicating the heat loss through the cooler-vent-stack, the main stack loss and the heat used for evaporation of the water in the pellets.

My proposal for a rearrangement of the equipment that might eliminate the aforementioned drawback is simply to remove the kiln gases completely from the system after they have passed through the heating section of the traveling grate. Instead, the cooler-excess-air is used for drying the pellets.

This rearrangement, as shown in Fig. 3, would have several advantages. The cooler-excess-air does not contain alkalis; and the gritty clinker-dust would be harmless when adsorbed on the moist pellets on the drying part of the traveling grate.

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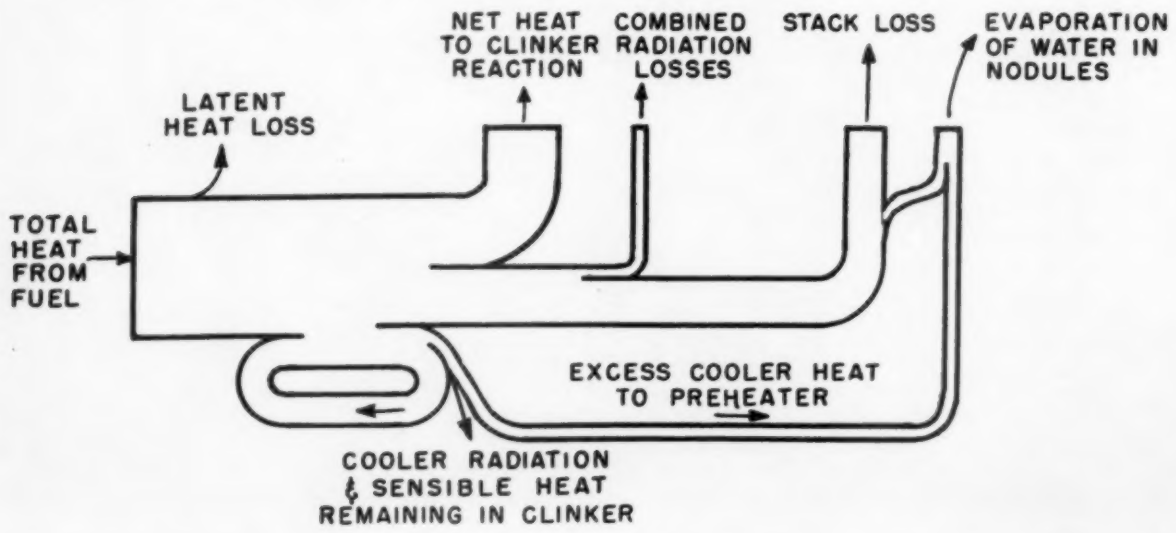
FIG. 4—Heat balance diagram for proposed arrangement of kiln, air-quenching cooler and preheater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Photographed on location by Jack Beech.

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LOW-ALKALI CEMENT FROM HIGH-EFFICIENCY KILNS?

continued from page 152

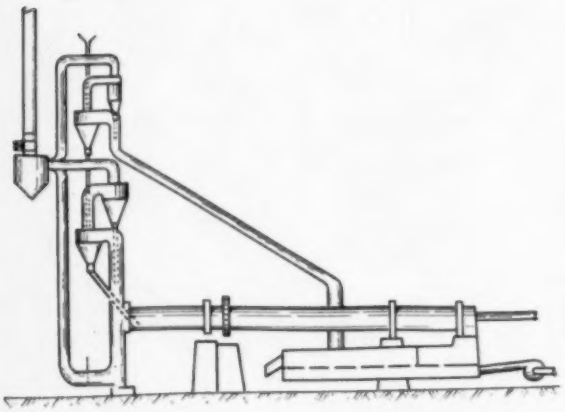

FIG. 5—Proposed arrangement of kiln, air-quenching cooler and suspension-preheater

And it might even exert a catalytic action on the calcining process. The kiln gases, after passing through the calcining part of the grate, and the cooler-air after passing through the moist pellets, will be withdrawn separately and carried to a common exhaust fan and dust-collecting system. The other two dust-collecting systems, shown in Fig. 1, have thus been eliminated. Since the purpose of such an arrangement would be to manufacture low-alkali cement, it undoubtedly would be necessary to waste the dust that is collected in the one remaining dust collector.

Data on alkali adsorption on pellets during their passage through the preheater are almost unobtainable, because of the difficulty of securing samples under normal operating conditions. Some observations taken from a double-pass Lepol kiln in England may be indicative. At this plant, the fresh pellets contained 0.8 percent alkalis; the pellets passing under the partition from the drying to the heating section of the grate contained 1.7 percent alkalis; leaving the preheater and entering the kiln, the pellets contained 1.5 percent alkalis, and the finished clinker had an alkali content of 0.8 percent. These figures would indicate that the heaviest transfer of alkalis from the gases to the pellets takes place on the drying part of the grate. They would also indicate that no alkalis are absorbed by the pellets in the heating part of the preheater and that, in fact, some alkalis might be volatilized at this place. Finally, these figures confirm observations made in this country that roughly one-half of the alkalis entering the kiln proper are volatilized in the burning zone.

In this proposed system the kiln gases would be withdrawn at their maximum concentration of alkali fumes, and the wet pellets that are so susceptible to alkali absorption would be dried in a stream of hot air containing no alkalis. A complete alkali balance for a double-pass Lepol kiln, prepared a few years ago at a plant in Sweden, shows that after having passed through the heating part of the preheater, the gases contained more than 50 percent of the amount of alkalis that originally entered the system in the kiln feed. Approximately half of this alkali quantity is collected in the intermediate cyclones (b), the balance being adsorbed on the pellets during this second pass. Under the proposed new arrangment, about 50 percent of the total alkali in the feed would, in other words, be removed from the system.

An important question is, of course, could the high fuel economy, now possible with modern preheater-kilns, still be maintained? Or would the advantage of being able to make low-alkali cement be gained at the expense of some fuel efficiency? Fig. 4 illustrates the flow of heat according to the proposed system. The heat used for the evaporation of water in the pellets would remain the same. The stack loss would be increased, due to the higher temperature fo the exit gases, but it should not exceed the total of the losses shown in Fig. 2.

The amounts of gases leaving the cooler, and particularly the quantity of gas moving from the first to the second pass in an ACL kiln, are extremely difficult to measure. Some figures indicate that the gases under the heating zone in the preheater (the gases which would be withdrawn according to this proposal) may have a temperature up to 600 deg. F., and that the cooler exhaust temperature might be about 450 deg. Other plants have found gas temperatures between the first and second pass of approximately 525 deg. and cooler-vent-stack losses of about 400 deg.

It would, therefore, be desirable to make certain adjustments in the heat flow of the system. The cooler should be slightly modified so that, if desired, it would provide more warm air for the preheater and, correspondingly, less secondary combustion air. Likewise, the partition in the preheater could be moved slightly towards its feed end so that the areas of the drying and heating zones of the traveling grate would correspond to the amounts of heat available. The pellets passing under this partition would then possibly contain a low percentage of residual moisture which would

Please turn to page 164

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EMPTY OILER SHUTS OFF AIR!

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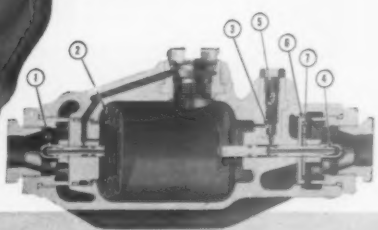

That's right! *You'll never burn out an air tool with the new Le Roi LO-380 on the job!* When the oiler runs dry, it automatically shuts off the air! The "no oil — no air" design prevents unnecessary wear on critical parts — cuts repair bills — extends tool life!

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FACES & PLACES

CANDID SHOTS OF PEOPLE IN THE ROCK PRODUCTS INDUSTRY

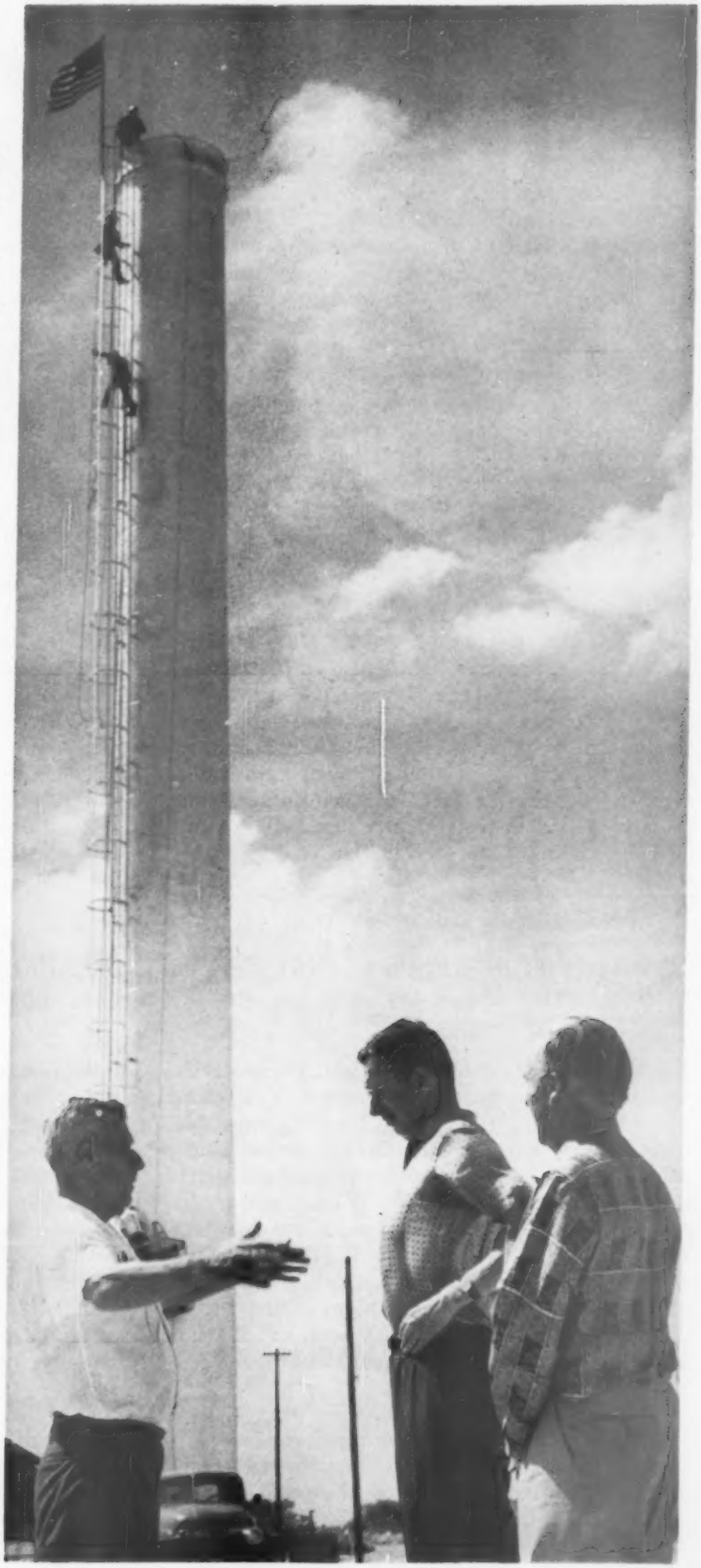
EXCHANGING GRINS AT THE STOCK EXCHANGE, New York, are (from left) Ellery Sedgwick, Jr., president of Medusa Portland Cement Co.; Joseph de F. Junkin, stock specialist, and G. Keith Funston, president of the exchange. That "MPD" on the ticker lists Medusa's opening common stock at 29½.

LEFT: NO, JUNIOR, THIS IS NOT AN ASTRONAUT. PCA President G. Donald Kennedy is merely showing the fine points of operating the ACL grate kiln system at Marquette's Milwaukee plant to W. D. Kimmel, PCA district engineer.

RIGHT: HIGH ON THE HAWAIIAN HORIZON looms this 100 ft. kiln exhaust stack, part of a $12 million Hawaiian Cement Corp. plant at Barbar's Point on leeward Oahu.

Inspecting the new plant's progress are (from left) G. A. Beckett, board chairman of both Hawaiian and American Cement Corp.; H. T. Mudd, president of Cyprus Mines and a director of Hawaiian Cement, and R. D. Fisher, president of Hawaiian Cement and vice president of Cyprus Mines.

And the three other guys topside? Just camera-shy.



TEXAN ON THE CLAMSHELL—President Ralph B. Rogers lends an official hand (at the clamshell controls) to ground breaking for the new Midlothian plant of Texas Industries, Inc.

SLAG PRODUCERS FACE CHALLENGING FUTURE

continued from page 146

the establishment of an equitable basis of slag's acceptance . . . ," cautioned Mr. Bauman.

One problem is the fact that slag normally is lighter in weight than natural aggregates. That problem is transferred, in specifications, in the use of weight instead of volume for the calculation of the basis of measurement and payment. Much thought and work have been given to this difficulty, but reports indicate that the matter will continue to receive emphasis by the association.

Safety gets top billing in the industry, too, along with emphasis on improvement of industry production efficiency and the work on construction specifications. This past year, the winning plant in the safety contest for Class A was Bethlehem Steel Co.'s Foam Slag Plant. Detroit Hard Slag Plant No. 1 of the Edward C. Levy Co. took the honors in Class B.

Engineering services, available to NSA members and users of slag, are increasing in importance. D. W. Lewis, chief engineer for the association, reported on more than a half dozen studies and tests that federal and other agencies have conducted on aggregates. Importance of continued contact with these agencies is that the opportunity to include slag in research tests on aggregates gives two big benefits. First, direct information on the use of slag in tests becomes available to the agencies making them. Second, use of slag in the tests eliminates the possibility of setting specifications without considering slag.

Research activities of NSA continue to provide more information on slag use. A report of the director of research, Mr. Fred Hubbard, fully discussed several interesting research activities and their results. Test data developed by a study of volume change in concrete masonry units show that low-pressure steam cured units made with expanded slag have shrinkage values below 0.065 percent, and for autoclaved units—less than 0.040 percent, the values set in the Corps of Engineers specifications. Actual test values on whole block by the Modified British Test Method were in the neighborhood of 0.04 percent for low pressure, 0.02 percent for autoclaved units.

Highlight of the entertainment program was a steak roast held for directors and guests on the final evening of the meeting. This event replaced the usual annual banquet.

Officers of NSA for 1960 include Charles W. Ireland, re-elected president; Mr. Edward C. Levy, vice president; and W. S. Shaw, re-elected treasurer. Mr. E. W. Bauman remains as managing director and secretary, and D. W. Lewis is chief engineer. Next operating meeting of the association will be held in Houston, Texas, in January. The 1960 annual meeting will be held in Washington, D.C., during November. **END**

CONSTRUCTION KEEPS CLIMBING—1960 NO EXCEPTION

continued from page 94

the whole) that they have ever been. Corporations added greatly to financial resources in '59. The board estimates accumulations for the year at $40 billion, a new record. In '58 the accumulations totaled $11 billion. Depreciation reserves, the write-downs from past investments in plant and equipment, increased $15.2 billion. Retained earnings during the year are estimated at $12 billion compared with only $4 billion in '58. This rise in financial resources augurs well for many industries, including the rock products industries, and it tends to offset some of the fears about tight money conditions.

The increase in corporation resources alone is more than 10 times the sales annually of the rock products industries. Then, too, the profit position and prospects likewise are considered excellent by the board, with the majority of American businesses likely to report unprecedented peaks for net earnings for the full year '59.

Similarly, consumer finances are strong, with liquid reserves at a new high of $519 billion. Their debts also are at new highs, at $164 billion, but that is in logical proportion to assets, leaving a record high net equity of $355 billion. Significantly, too, personal income from wages and salaries is booming along at a record annual rate of $341 billion, up more than six percent over the rate a year ago. Against this rise is the fact of only a one-percent rise in the consumer price index, giving the consumer added benefits in buying power, and pointing to better ability to purchase new homes than is generally realized.

Considering various preceding factors, the board concludes that demand for products of the nonmetallic mining industry will attain strong new highs in 1960. **END**

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C-TL-373

ROCKY'S NOTES

continued from page 16

Union and the Industrial Relations Executive of the company."

Any objective reader, who will read through this Section 2-B of the old agreement could hardly help concluding that it is indefinite and ambiguous, and probably would not be understood or interpreted the same way by any two unbiased readers. The steel companies say it has prevented them from making changes vital to greater productivity, and the union bosses say it represents many years of constructive effort on their part to establish fundamental "rights." Labor appears to be willing to admit that some changes may be desirable, but is unwilling to allow changes to be made unilaterally by management, or by arbitrators they fear may be unduly influenced by management.

This issue was resolved in the case of the Kaiser company by agreeing to the appointment of a mixed committee of management and labor to authorize such changes in working rules or schedules as could be proved in the interests of both. We listened to the "Meet the Press" television interview with Edgar Kaiser and, in our opinion, he was both liberal and logical. He said increase in productivity of his company during the past few years had averaged 2.6 percent per annum. He saw no reason to believe it would not continue to increase at a similar rate for the next few years. This took care of the wage increases without resulting inflation. He had faith that the committee arrangement for settling working conditions to increase productivity could be made to work.

It is debatable whether or not labor is entitled to all the benefit of increased man-hour productivity, since the increase is more often the result of new investment in tools and equipment than of any greater effort on the part of labor. However, instead of spreading the lower costs with the public, as was formerly the custom, it has become established that it should go to labor through increased wages. If wage increases could be confined to such increase in productivity, at least we would have price stability.

Kaiser's case is probably simpler than that of U. S. Steel because he has only one or two plants and, hence, fewer local conditions to deal with. But the point is that he is not frightened or stubborn about the prospect of organized labor having a foot in management's door. Asked if he did not fear labor's wanting to take over his job, he answered frankly with a smile that he did not think labor wanted to take over his responsibilities.

Looking back into the history of union labor, we readily see that it started and developed because

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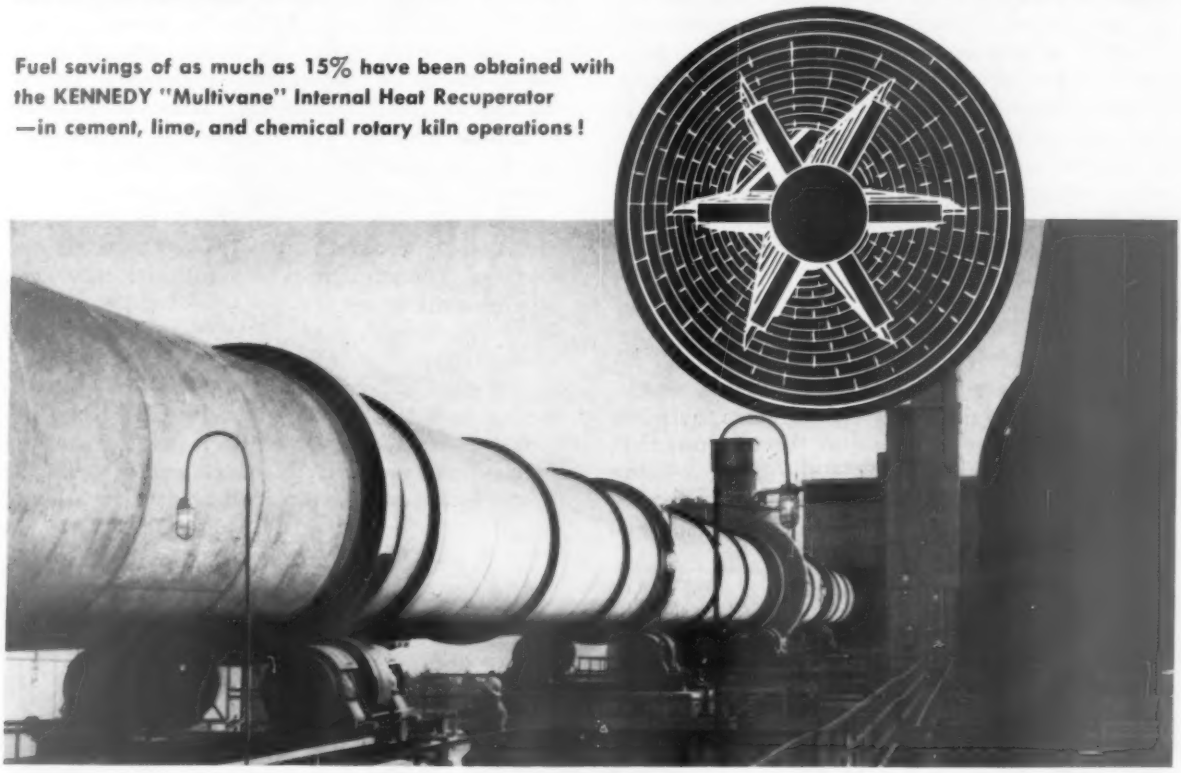

ITS PRINCIPLE IS SIMPLE . . .

In ordinary rotary kiln operation, a limited percentage of the kiln charge is in direct contact with the hot refractory and with the hot gases. By installing internal, heat-resistant, cast alloy steel plates, each having six integral, diagonal vanes, both the direct heat transfer surface and the exposure of the kiln charge to the hot gases are increased by almost 200%!

ITS ADVANTAGES ARE MANY . . .

With the "Multivane" Recuperator far more heat is absorbed by the kiln charge, radiation loss is reduced and less valuable heat is lost up the stack. Gas flow is maintained at its optimum velocity and dust loss is sharply reduced.

OTHER ADVANTAGES OF THE KENNEDY "MULTIVANE" INTERNAL HEAT RECUPERATOR ARE:

- Recuperator parts are of minimum thickness, maintaining high kiln cross-sectional area;
- Alloy shoes, the exact size of refractory brick and spaced to fit the refractory courses, provide simple, yet effective, attachment to the kiln shell;
- Alloy hubs hold the recuperator in rigid alignment, but are independent of the kiln itself;
- Length and location of the recuperator in the kiln is determined by careful study and exactly fitted to the specific operation;
- KENNEDY "Multivane" Internal Heat Recuperators can be installed in existing kilns with a minimum of downtime.

ADD ECONOMY to your Kiln Operation. Investigate, with no obligation, the proven performance of the KENNEDY "Multivane" Internal Heat Recuperator.

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MANUFACTURING & ENGINEERING CORPORATION
405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

PRIMARY & SECONDARY GYRATORY CRUSHERS • JAW CRUSHERS • ROLL CRUSHERS • IMPACT BREAKERS • HAMMER MILLS • ROD & BALL MILLS • KILNS • DRYERS • SCREENS • MECHANICAL & PNEUMATIC CONVEYORS • COMPLETE CRUSHING, LIME, CEMENT & CARBON PASTE PLANTS. KENNEDY RESEARCH & TESTING SERVICE.

Enter 1483 on Reader Card

ROCKY'S NOTES

continued from page 160

workers sought security of jobs fully as much as higher wage rates. Forty or more years ago an employer hired and fired, suspended or ceased production altogether, solely to suit his own whim, convenience or fortune. Labor unions and an enlightened point of view on his part have made the employer aware that he has a social responsibility to maintain employment for people he has induced to work for him and whose home ties have been made in the expectation that their employment would continue. Thus were built up the various labor contract clauses of which that of B-2 in the U. S. Steel Corp. contract is an example—complicated and cumbersome as it is. Employers in general, now faced with a serious problem of trying to prevent more inflation, want more freedom to increase productivity, since that is the only way increasing wages can be prevented from increasing prices.

It should be recognized, however, that all increases in prices (inflation) are not due to the "wage-price spiral." In the last 20 years there has been a tremendous increase in the tax load that industry must carry, also only by increasing prices. Hence, it is just as important, and far more logical and helpful, for government, both national and local, to reduce this tax load than for the President, Congress and local authorities to preach about the necessity for industry to control inflation. We doubt, if you were a union member, that you would want to assume the whole responsibility for inflation, nor would you be enthusiastic about stabilizing wages until other segments of the economy showed some desire to stabilize expense.

The enlightened point of view on private capitalistic economy is that it must operate for the benefit of society as a whole by producing and marketing products for the largest possible number of buyers. Management is responsible for doing this at a profit sufficient to attract investment of capital. The primary responsibility of management is generally assumed to be to capital, as represented by a board of directors. However, management also has the responsibility of assembling and keeping productively employed a number of workers. Directors, management and labor can hardly desire to price a product out of the market. Hence, they must work together to prevent such a calamity.

The point we would make is that we see nothing wrong in Edgar Kaiser's theory that labor can safely be trusted to work with management to increase plant productivity. Intelligent labor is far better equipped to see operating waste, inefficiency

Please turn to page 164

EHRSAM

INTERFLOOR TRANSPORTATION

EHRSAM offers a complete line of elevator equipment, carefully designed and built of the finest materials. The exacting perfection demanded by **EHRSAM** standards insures uniform speeds and high-operating efficiency on all elevating equipment. Although requirements vary to suit individual needs, the same sound engineering principles are applied to every **EHRSAM** elevator.

Write Today for Your Copy of
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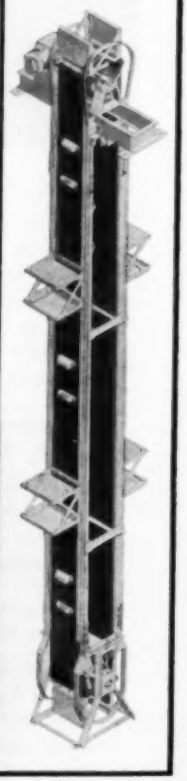
The J. B. Ehrsam & Sons Mfg. Co.
ELEVATOR DIVISION
ENTERPRISE, KANSAS, U. S. A.

ELECTRIC ELEVATORS *Passenger and Freight* WITH CONSTANT PRESSURE OR AUTOMATIC CONTROLS

BELT MANLIFTS FOR CONSTANT OPERATION AT MODERATE SPEEDS



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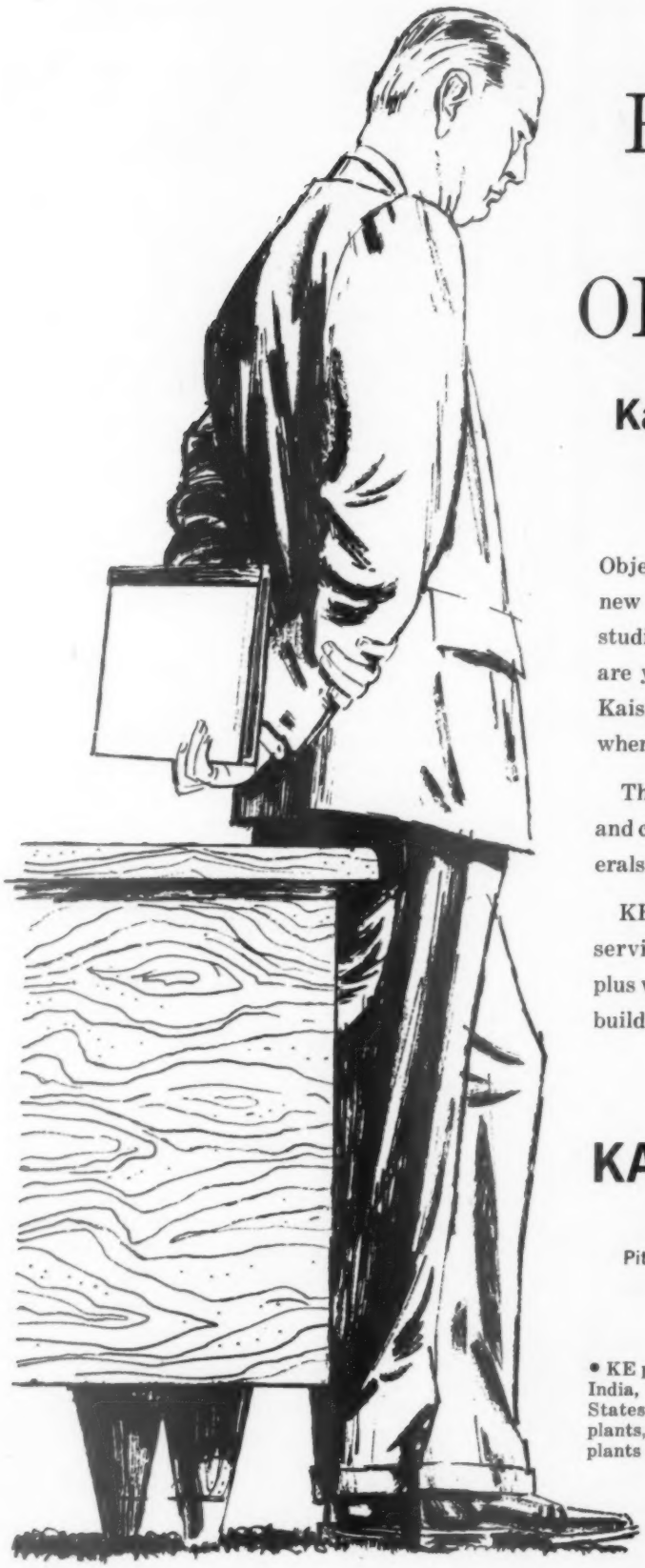

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Objective analysis is vital to sound decision on new plant or expansion projects. Feasibility studies, economic analyses and site evaluations are yours by an outside, impartial firm when Kaiser Engineers is selected to help you decide when, how and where to proceed.

These services are in addition to the design and construction of major facilities for the Minerals industry.

KE offers complete, one-company, integrated service from concept through construction—plus world-wide experience and the ingenuity to build quickly, within budget.

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Division of Henry J. Kaiser Company
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• KE projects include work in Australia, Brazil, Ghana, India, New Zealand, as well as Canada and the United States. Assignments include iron ore concentrating plants, cement plants, bauxite and alumina processing plants and diatomaceous earth facilities.

5458-M

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for better washing . . . dust control . . . concrete curing

SPRAY NOZZLES

from Spraying Systems Co.

- complete choice of types and capacities to fit your job
- greater efficiency with minimum volume of water

Proper distribution and impact for washing . . . or proper atomization for dust control and concrete curing without unnecessary wetting . . . these are just some of the advantages of having a complete choice of spray nozzle types and sizes to fit your job. For complete information write for Catalog 24.

SPRAYING SYSTEMS CO.
3285 RANDOLPH STREET
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HOLZ
Vulco-Lagged PULLEYS

GRIP BETTER to keep traction **UP**

DRIVE HARDER to keep production **UP**

WEAR LONGER to keep profits **UP**

HOLZ Vulco-Lagged PULLEYS step up performance and eliminate seasonal maintenance to save you dollars and downtime! Tough, abrasion-resistant lagging of specially compounded rubber is permanently bonded to metal pulleys for positive, non-slip driving. Pulleys run longer without re-lagging*; belts run longer without renewing! Have lagging applied to **your** pulleys, or order **HOLZ Vulco-Lagged Pulleys** complete. Write for detailed information today.

*Up to 10 years operation reported on HOLZ Pulleys.

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SERVING INDUSTRY FOR A QUARTER CENTURY

HOLZ RUBBER COMPANY, INC.
1137 SOUTH SACRAMENTO STREET • LODI, CALIFORNIA
Dealer inquiries solicited.

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ROCKY'S NOTES

continued from page 162

and incompetence (on the part of management as well as of labor) than are the usual company directors who are interested primarily, and perhaps solely, in the balance sheet, and profit and loss statement.

The efficiency of our system of private capitalism is based on the voluntary giving of the best of our abilities to whatever job we may be assigned or are capable of holding. No one can be forced to give his best against his will. He can be persuaded to do so by a better understanding of the importance of his small contribution to the success of the whole enterprise. That is the problem of management in a nutshell. If putting a capable representative of a labor union on the board of directors would help accomplish this, why not put one on?

LOW-ALKALI CEMENT . . .

continued from page 154

be evaporated in the heating zone by the hot combustion gases from the kiln. (See Fig. 4.)

The induced-draft fan for the entire kiln system and the one remaining dust collector would, naturally, also have to be increased in size.

This proposal to withdraw kiln exhausts from a kiln-preheater system at their point of near-maximum alkali concentration and, in their place, to introduce hot air from the clinker cooler to minimize alkali absorption by the raw materials in the preheater and facilitate the manufacture of low-alkali cement is not limited to the ACL system or double-pass Lepol kilns. Fig. 5 illustrates an application of the same proposal for a Fuller-Humboldt suspension preheater kiln. As shown, the kiln exit gases would be withdrawn from the system, after having passed through two of the four stages, and warm air from the cooler would be passed through the remaining two. The flow of raw materials through the cyclones and into the kiln would remain substantially as in conventional installations.

If separate calcinators, equipped with chains or heat exchange elements, are used in connection with wet-process kilns, the same principle could be applied by withdrawing the alkali-rich kiln exit gases at the feed end of the rotary kiln proper and passing the hot air from the cooler-relief-stack through the preheater.

Finally, it is again emphasized that this proposal does not have as its aim to further improve the economy of modern high-efficiency kilns. Its purpose has been to suggest a method whereby the alkali content of clinker produced in such kilns may be reduced substantially. **END**

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HOW TO USE THIS SERVICE

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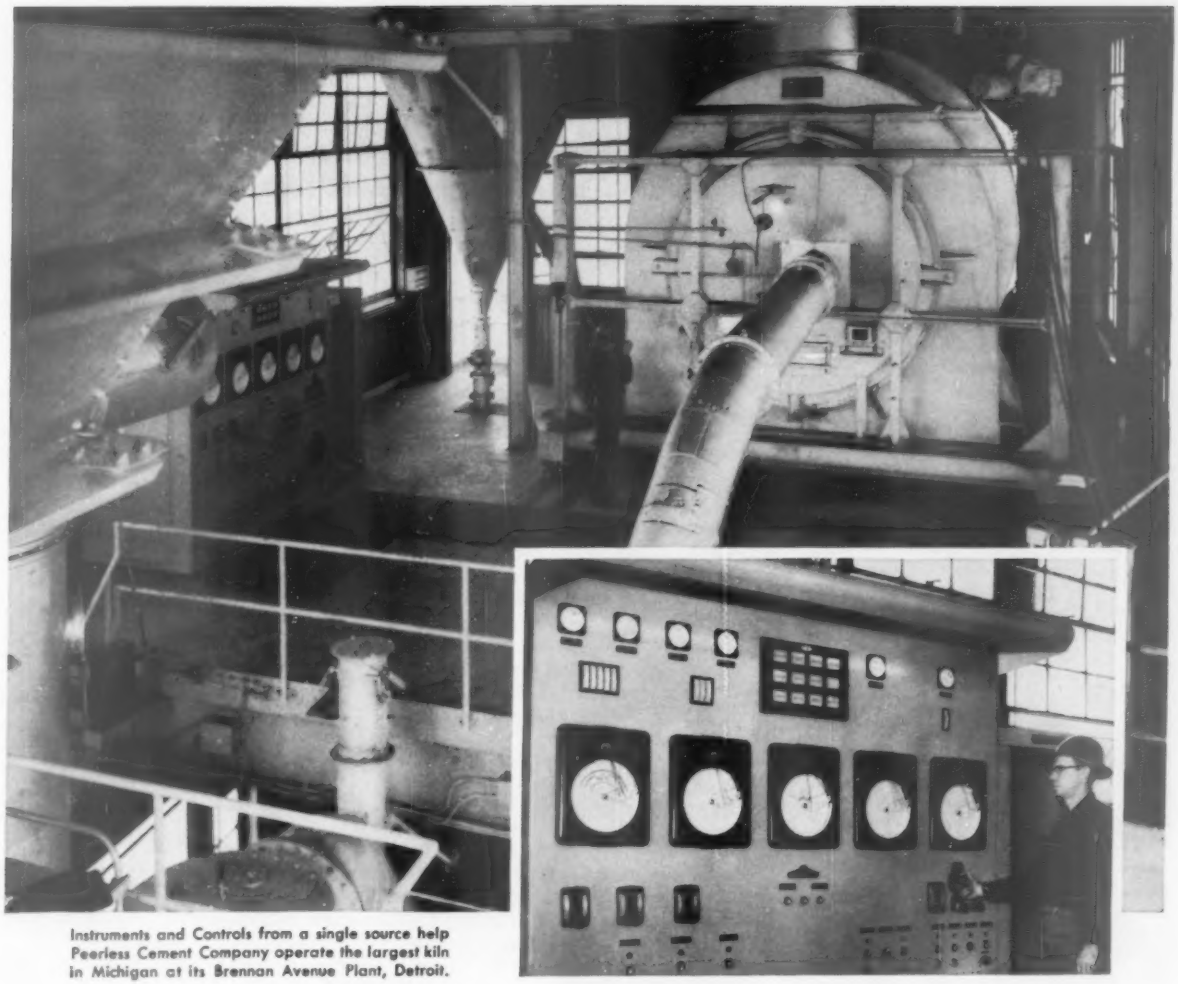
There is a wealth of valuable information in the manufacturers' booklets offered in this issue. For your convenience, each advertisement, each new machinery and new literature item has been given a key number. Simply fill in the proper key number in the appropriate space on the card above and send it to us. We'll do the rest.



Instruments and Controls from a single source help Peerless Cement Company operate the largest kiln in Michigan at its Brennan Avenue Plant, Detroit.

This giant kiln gives peak performance <u>longer</u> with Bailey Controls

The Peerless Cement Company of Detroit demands maximum capacity, uniform production and low fuel rate from its largest kiln . . . and Peerless gets it!

They do it with a Bailey Control System that gives them complete control of combustion, clinker cooler, and other kiln variables.

The system keeps continuous chart records of 11 important variables, including temperatures, drafts, air flow, kiln speed, fan speed, % oxygen, and % combustibles.

All this is done so dependably that the kiln often makes week-long runs without being touched.

All recording receivers in the Bailey System are plug-in components—easily removed, regrouped, or replaced to meet changing requirements. Additional records are added simply by plugging in receivers on existing recorder cases. Your Bailey Engineer can help you plan for peak performance — call him or write for your Bailey Kiln Control Folder.

C115-1

BAILEY METER COMPANY

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BAILEY METERS

Enter 1485 on Reader Card

NEW LITERATURE

FOR FREE INFORMATION on these items, simply fill out and mail the postage-paid Reader Service Card found elsewhere in this issue

Crane-excavator

SCHIELD BANTAM CO. has announced bulletin C-350, describing its crawler-mounted Model C-350 crane-excavator. Features such as the unit's new heavy-duty turntable design and heavy-duty drum shaft and swing assembly are described, as well as a complete line of front-end attachments. Used as a shovel, the excavator uses buckets ranging from ⅜-cu. yd. for digging, to ⅝-cu. yd. for rehandling.

Enter 700 on Reader Card

Manual on industrial safety

NATIONAL SAFETY COUNCIL has announced publication of the fourth edition of its "Accident Prevention Manual for Industrial Operations." Compiled and edited by safety specialists, the book has 1,542 pages of timely data on every aspect of industrial safety. The manual is termed "the most complete and informative safety reference work in existence." Producers should write the Council at 425 N. Michigan Ave., Chicago 11, Ill., for price information.

Belt takes 45-deg. idlers

RAYBESTOS-MANHATTAN, INC. has released a brochure describing advantages claimed for its Ray-Man conveyor belt when used with 45-deg. conveyor idlers. It is well known, the brochure states, that belts have more capacity with 45-deg. idlers than with the usual 20-deg. idlers. But formerly, belts wouldn't train well with this sharp angle, and flex fatigue caused ply and cover separation.

The new Manhattan belt has been designed to eliminate these problems, the maker states, thus permitting carrying capacity about 25 percent greater when transporting sand, gravel, stone, lump gypsum or lump lime (all materials with maximum angle of repose of 20 deg.).

A further advantage made possible by the use of the belt with 45-deg. idlers, the maker states, is less spillage, since the sharper side angles on the belt retain material well.

Enter 701 on Reader Card

Screen cloth heaters

F. R. HANNON & SONS is distributing a bulletin describing the applications of its screen heaters. Heaters are the best method of limiting blinding, the brochure states, since the various mechanical methods tried earlier reduced screen life and were not as effective. Effective screen heaters have been in use in the rock products industry for only about a decade, the brochure indicates.

While early models were applicable only to small screens, were not dustproof, and made cloth changing difficult, the newest models have eliminated these faults, the brochure asserts. Features of the screen heaters are described.

Enter 702 on Reader Card

Two-compartment cyclone

DENVER EQUIPMENT CO. is distributing Bulletin C4C-B1, describing its Denver-Morton Duplex cyclone classifier. The unit's first compartment is like that in other liquid cyclones, making a sand-slime separation, the bulletin states.

But the Duplex Cyclone handles peak flows, which normally would plug a conventional cyclone, by bleeding some of this material to the second compartment, the bulletin states. This

second unit is similar to the first, but smaller; too, additional wash water is added, since the second-compartment feed is thickened before entering.

The Duplex Cyclone is said to give a cleaner product (underflow) and a higher density product than other cyclones, because of its unique design.

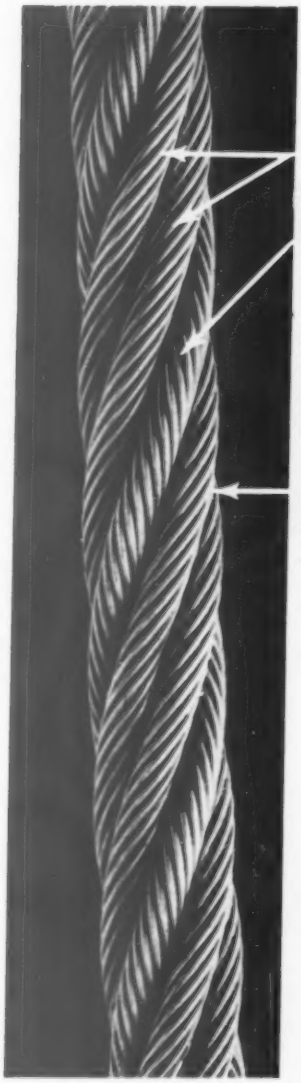
Enter 703 on Reader Card

New crawler tractor

EUCLID DIVISION, General Motors Corp., has released form 607, describing its new C-6 crawler tractor. The single-engine unit has 211 net hp. to the power train, the 24-page brochure states.

Enter 704 on Reader Card

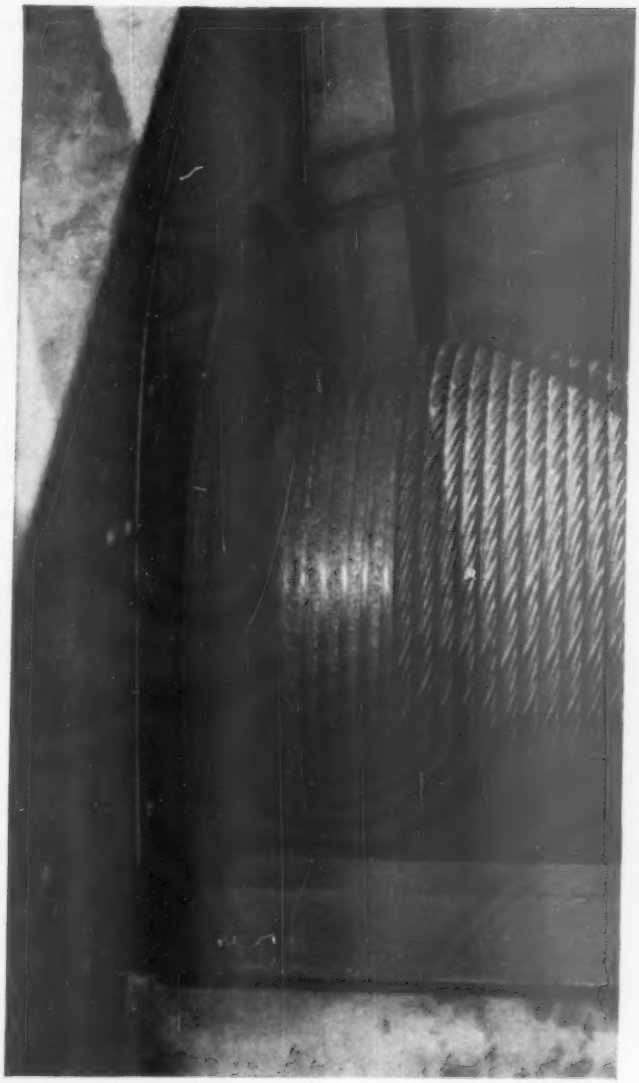
(Continued on page 170)



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.



"...we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: **"We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."**

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope —two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

Enter 1486 on Reader Card

NEW LITERATURE

(Continued from page 168)

Plant erectors

ERECTORS & RIGGERS INC., has released a brochure describing its erecting and rigging service for the cement, lime, gypsum and allied industries. It has made more than 85 cement-plant installations in the last 10 years, in the U. S. and Canada, the firm reports, and has 23 top veteran personnel doing nothing but cement, lime and gypsum plant work.

Enter 705 on Reader Card

Chert's effect in concrete

THE DIVISION OF MINES of California's Department of Natural Resources has released Special Report 55, titled "Franciscan Chert in California Concrete Aggregates." Written by the Division of Mines' Harold B. Goldman, the report considers the problem of chert as a reactive ingredient in concrete aggregate.

Since Coast Range aggregates contain relatively large amounts of Franciscan cherts, they have been suspected of making concrete aggregates of poor quality (since the chert has been classed as potentially reactive with the alkalis which are found in portland cement).

But Mr. Goldman examined buildings 20 to 50 years old, made with chert-bearing sand and gravel, and found no signs of alkali-aggregate reaction. Other interesting findings are presented, too. The report, priced at 50 cents, may be had by writing the Division at Ferry Building, San Francisco 11, Calif.

Researching cement properties

PORTLAND CEMENT ASSOCIATION has released a report titled "The Surface Energy of Tobermorite." A report of research done by Stephen Brunauer, D. L. Kantro and C. H. Weise, the paper correlates the properties of concrete and mortar with the properties of tobermorite, the most abundant constituent of hardened portland cement paste. The relation between specific surface area of hardened paste, and such properties of concrete as strength, shrinkage and permeability has been correlated.

Enter 706 on Reader Card

75-95 hp. gas, diesel power

INTERNATIONAL HARVESTER CO. is now distributing Catalog CR-608-I, describing its new middle-size carbureted and diesel engines. A 75-hp. and a 95-hp. model are available for each fuel type.

Lower cost diesel power for this size range, and more rugged carbureted-engine design are advantages claimed for the new models. What makes this possible, the maker states, is interchangeability of most parts (the diesels and carbureted models differ largely in head and piston sections). A variety of components and attachments are available, so the engines can be adapted to many applications, the maker states.

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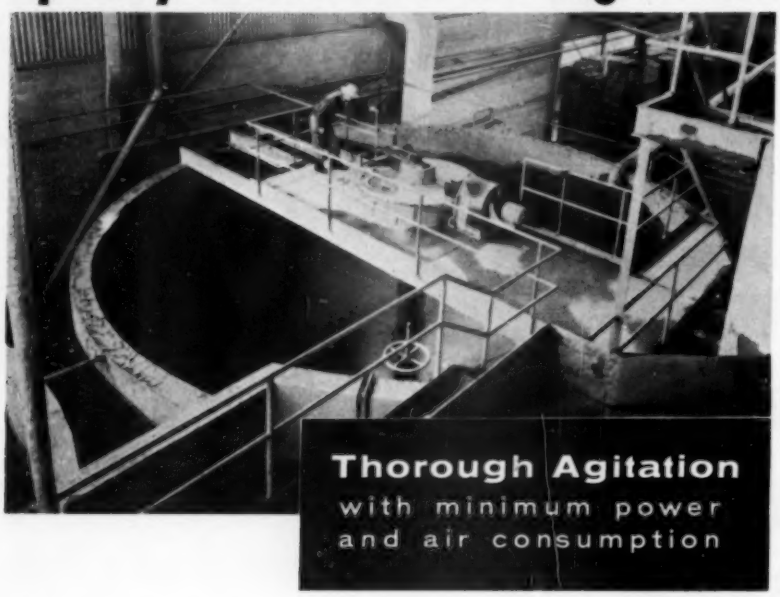
END

Specify MANITOWOC Agitators



Look at the Manitowoc Agitator above, installed in a clay slurry tank 30 ft. in diameter and 25 ft. high. This is but one of dozens of Manitowoc Agitators found in the foremost cement producing plants, both in this country and overseas. These quality conscious operators depend on Manitowoc for complete, uniform and economical slurry agitation . . . *plus* design which permits the installation of agitators in tanks up to 100 ft. in diameter, or larger.

By combining mechanical and air agitation, Manitowoc Agitators maintain consistently uniform particle size and chemical analysis in any type of slurry *without* a continuous application of air. As a result, compressed air consumption and operating costs are substantially reduced. Combine this cost-saving feature with the exclusive Manitowoc Control Valve, scientific air pipe design with an improved check valve, and rugged, channel construction agitator arms and you have the finest slurry agitator for turning out highest quality cement at *your* plant. Write now for detailed, helpful information.

Manitowoc Shipbuilding, Inc.

MANITOWOC, WISCONSIN

A subsidiary of The Manitowoc Company, Inc.

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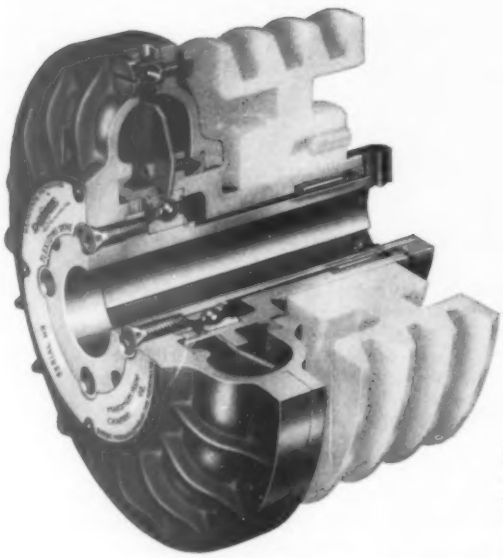
WHAT'S YOUR PROBLEM?...

- ☑ Overheated motors?
- ☑ Excessive belt maintenance?
- ☑ Breakage of materials being processed —like thread, wire, paper?
- ☑ Expense of oversize or high torque motors?
- ☑ High demand rate?
- ☑ Expense of reduced voltage starters?
- ☑ Clutch trouble?
- ☑ Breakage of transmission parts due to instantaneous shock loads?
- ☑ Damage and recurring down-time from overloads?



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THE DRY FLUID DRIVE

It is no longer necessary to accept the destructiveness—the costliness—of conventional starting in the mechanical transmission of power. Flexidyne changes that!

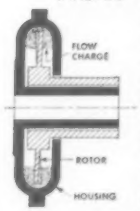
Flexidyne is the new way to start loads *smoothly*—to protect against shock and overload—to save power—all *without any sacrifice of efficiency at full load!*

This revolutionary development is ushering in "the day of the soft start"—which can mean thousands of dollars to you in equipment savings and in better, more economical operation.

Flexidyne is available, off the shelf, in Drives and Couplings. Capacities range from fractional to 1,000 hp. Ask your local Dodge Distributor or write us for technical bulletin.

DODGE MANUFACTURING CORPORATION, 2600 Union St., Mishawaka, Ind.

HOW FLEXIDYNE WORKS



The "dry fluid" in Flexidyne is tiny heat-treated steel shot. A measured amount, called the "flow charge," is contained in the housing, which is keyed to the motor shaft. Inside the housing is a rotor, free to revolve relative to the housing, but connected to the load.

When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor, which transmits power to the load. Initial slippage is momentary. Housing and rotor become locked together and achieve full load speed without slip and at 100% efficiency.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE

of Mishawaka, Ind.

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NEW PATENTS

by OLIVER S. NORTH

RECENTLY ISSUED PATENTS ON NONMETALLIC MINERALS*

Cement

U. S. 2,904,323—In a **portland cement** clinker cooling apparatus, clinker falls from the kiln into a chamber where it is blown with air. Fine material is picked up by an exhaust blower while the larger, heavier clinkers are moved along via a movable plate grate. This same patent also was issued as Canadian No. 582,155, dated Aug. 25, 1959. (to F. Cova, S. De Amicis and C. Cesareni; assigned to Cementir Cementerie Del Tirreno S.p.A.)

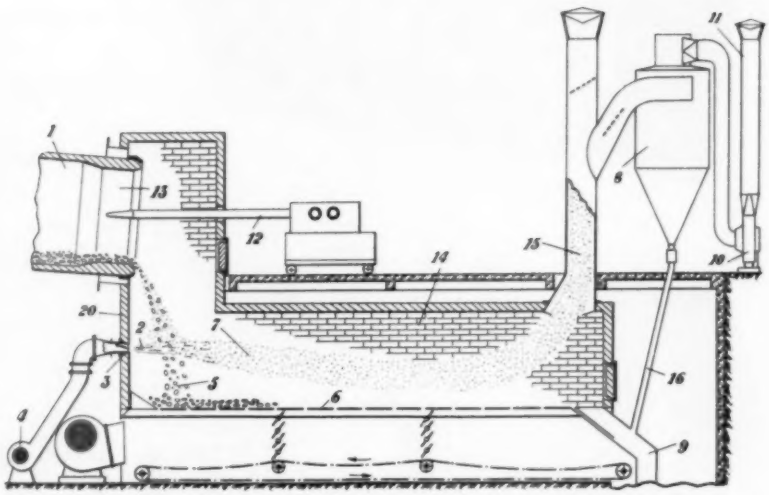
U. S. 2,904,324—In this **portland cement** kiln construction, problems caused by formation of sintered clinker rings are held to a minimum. The kiln section most susceptible to ring formation is designed to be removed when a ring has formed and quickly replaced by an identical section. (to R. B. Aitchison)

U. S. 2,904,445—Process for utilization of oil shale in the manufacture of **portland cement,** whereby the shale serves both as a raw material and as a source of fuel for the burning. A vapor dispersion of the shale is formed and subjected to extreme turbulence. Thereafter, it is mixed with calcareous material and burned. (to F. B. Sellers and H. C. Chapin; assigned to Texaco Development Corp.)

U. S. 2,905,395—Method and apparatus for partial cooling of **portland cement** clinker by contacting it with a cooling gas, followed by separation and cooling of the larger clinkers. This crushed clinker is then re-combined with the fine clinker and the combined material cooled. (to L. Petersen; assigned to F. L. Smidth & Co.)

U. S. 2,905,565—To improve the flow characteristics of **portland cement** raw material slurries without increasing the water content, there is added to the slurry small percentages of a polybasic organic acid salt, a sulfonic acid of the naphthalene series, and a carbazol-tetra-sulfonic acid. This slurry can be stored without sedimentation. (to K. Dietz, H. Greune and R. Stroh; Farbwerke Hoechst A. G. vormals Meister Lucius & Bruning)

(Continued on page 174)



In this diagrammatical cross-section view of Patent No. 2,904,323, clinker falling from rotary kiln (1) is intercepted by cool air stream (2) which carries fine particles (7) across the cooler in air suspension, while large clinkers (5) fall through the air stream onto plate grates (6), on which they are conveyed through the cooler, finally dropping out through outlet (9). The fines are drawn through flue (15) into cyclone (8) by fan (10), and thereafter recombined with the large clinker via pipe (16).

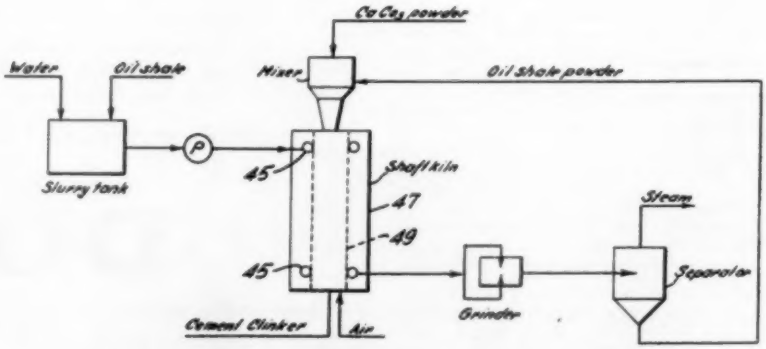


Diagram data of Patent No. 2,904,445 shows one arrangement of apparatus for production of cement clinker from oil shale.

*Copies of United States patents are available at a cost of 25 cents each (photostat copies of foreign patents at 30 cents per page) from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

H-R SECTIONAL CONVEYORS:

Right for the big jobs too!

The world's largest aggregate plant, in Niagara Falls, N. Y., uses some two miles of Hewitt-Robins sectional conveyors and 27 H-R vibrating screens. Built in connection with the New York Power Authority's $700,000,000 hydro-electric project, this giant plant has an aggregate capacity of 2,200 tons per hour.

On jobs large and small, Hewitt-Robins sectional conveyors save money and cut costs too. For special conditions or unusual layouts, they can be readily adapted under field conditions. For further details, consult your H-R representative, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 1-19.

HIGHLIGHTS

- All conveyors, screens, and conveyor speed reducers by Hewitt-Robins.
- Twenty-seven big 6′ x 16′ Vibrex screens —most shipped from stock.
- Approximately two miles of sectional conveyors and standard bents—many units shipped from stock.
- Eighteen Jones speed reducers.

HR HEWITT-ROBINS

THE NAME THAT MEANS EVERYTHING IN BULK MATERIALS HANDLING SYSTEMS...
DESIGN, MANUFACTURE, INSTALLATION, AND SERVICE OF ALL COMPONENTS

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NEW PATENTS

(Continued from page 172)

Cement

U. S. 2,908,179—Improved **portland cement** or **lime** kiln having at least two tire sections supported on plural rolling elements. Only one tire section is driven, the other rolling elements being driven synchronously by the kiln itself. The single power unit, in a sealed enclosure, is located at one of the calculated reaction points. (to J. H. Taylor; assigned to Vulcan Iron Works)

U. S. 2,910,286—Design for a **portland cement** rotary kiln rotating mechanism wherewith kiln rotation does not stop when there is an electric power failure. (to J. C. Holm; assigned to Marland One-Way Clutch Co.)

U. S. 2,910,372—To produce a **portland cement** capable of making concrete of improved hardness, the cement powder is mixed with titanium dioxide and nickel powder, and irradiated with 100 to 400 million roentgens. Alternatively, the raw material mixture is treated in about the same way prior to being fired in the rotary kiln. (to S. L. Ruskin; assigned to Union Carbide Corp.)

U. S. 2,911,061—Design for an apparatus for separating dust particles from exit gases from kilns used in producing **portland cement, lime,** etc. A controlled amount of liquid is injected into the gases. (to L. Petersen; assigned to F. L. Smidth & Co.)

Canadian 583,784—Design for an improved cooler for cooling **portland cement** clinker, **lime,** calcined **dolomite** or **magnesite,** and the like. Increased percentages of the heat are recovered for re-use in the kiln. This patent is substantially the same as U.S. Patent No. 2,861,353, dated Nov. 25, 1958. (to O. G. Lellep; assigned to Allis-Chalmers Mfg. Co.)

Phosphate rock

U. S. 2,908,561—In a process for producing enriched fertilizers from green or cured superphosphate derived by acidulation of **phosphate rock,** the normal superphosphate is mixed with calcium metaphosphate, potassium metaphosphate, or sodium metaphosphate, and pile cured for from 5 to 60 days. (to J. E. Seymour; assigned to Central Farmers Fertilizer Co.)

U. S. 2,911,295—A composition useful for conditioning and fertilizing soils comprises about 50 percent **phosphate rock,** 15 percent **rock salt** and 35 percent oil shale. The phosphate rock and rock salt are mixed, and the mixture heated, cooled and bedded on the oil shale. Thereafter, the bedded materials are intermixed. (to C. Peter; assigned to L. H. Peter)

U. S. 2,912,317—Method of preparing a granular mixed fertilizer comprising essentially **phosphate rock,** petroleum coke or the like and **langbeinite.** (to G. H. Gloss; assigned to International Minerals & Chemical Corporation)

Canadian 583,709—Improved electrostatic method and apparatus for concentrating **phosphate rock.** (to I. M. LeBaron; assigned to International Minerals & Chemical Corp.)

Canadian 583,711—In the recovery of the different values from low-grade **phosphate rock,** the rock is agitated with acid and leached with water. A leach solution containing phosphorus, aluminum and the uranium values is recovered and further treated. This patent is substantially the same as U.S. Patent No. 2,894,809, dated July 14, 1959. (to J. B. Adams and R. F. McCullough; assigned to U. S. Atomic Energy Commission)

Kyanite

U. S. 2,911,311—Use of **kyanite,** zircon, periclase, etc., in refractory investment compositions. (to R. C. Feagin, R. B. Sosman and R. A. Horton; assigned to Howe Sound Co.)

U. S. 2,912,341—A castable refractory comprises **alumina cement,** a refractory aggregate, and one of the group $BaCO_3$, $CaCO_3$, and $SrCO_3$. Suitable aggregates include **kyanite,** fireclay, chrome ore, exfoliated **vermiculite** and the like. (to R. W. Ricker; assigned to Aluminum Co. of America)

Clays

U. S. 2,908,580—Use of **kaolin, silica** and **whiting** in the production of a ceramic sealing material for use in electrical equipment. (to W. C. Stetson; assigned to Saxonburg Ceramics)

U. S. 2,909,740—Use of a **bentonite**-amine reaction product in tough and flexible resinous molding compositions. (to M. P. Seidel and C. J. Bell; assigned to Westinghouse Electric Corporation)

U. S. 2,912,397—Use of unbleached air-floated **kaolin** as the preferred filler in chlorine-containing vinyl resins used as dielectric insulating materials. (to V. J. Houska and R. J. Lurie)

Canadian 583,497—In the production of activated clay from **bentonite,** the clay-sulfuric acid solution is subjected to heated air and then passed through a separate heating zone into which saturated steam is introduced. The preheated clay mass is instantaneously activated. This patent is substantially the same as U. S. Patent No. 2,872,419, dated Feb. 3, 1959. (to I. E. Puddington and J. R. Farnand; assigned to National Research Council)

Granite

U. S. 2,908,139—Method for establishing in walls built of **granite** or other dimension stone a part of the compression originally present in the stone in its natural bedded formation, thereby improving its compressive strength in buildings. (to W. B. Horton and J. B. Taylor)

Gypsum

U. S. 2,909,223—Method of making improved **gypsum**-base cement for use in oil-well cementing, grouting, etc. A specified water loss reducing agent is added. (to H. H. Kaveler; assigned to Phillips Petroleum Co.)

U. S. 2,909,850—Construction for a **gypsum** wallboard dryer wherein the edge portions of the board are protected against overdrying and calcination. (to C. J. Loechl; assigned to Celotex Corp.)

Wollastonite

U. S. 2,910,760—Improved process for making single-fired, porous-bodied glazed ceramic articles from batches comprising optimum proportions of **wollastonite** mixed with **ball clay, feldspar, kaolin** and the like. (to W. M. Jackson II; assigned to Godfrey L. Cabot, Inc.)

Diatomite

Canadian 583,541—Use of **diatomite** in a rubber-like cashew nut oil-phenol formaldehyde resin composition used for making silent gears, tumbling barrels, caster wheels, etc. (to F. E. Newman; assigned to Dominion Rubber Co.) **END**

International Minerals cuts costs, bag breakage with WONDERWALL™

"With 70 plants in 30 states, bag breakage was a major problem," relates S. Arthur Fournier (*standing*), Purchasing Agent, Central Buying, for International Minerals & Chemical Corporation, Skokie, Illinois. "Since switching to WONDERWALL bags, breakage has been reduced up to 90% on shipments from plants using only WONDERWALL."

Customer Service Manager Joseph J. Bozis explains: "We *tested* the bag. We loaded cars half with WONDERWALL, half with conventional kraft bags. In every examination on arrival at destination WONDERWALL breakage was substantially less than ordinary kraft multiwalls."

WONDERWALLS prove better because they're made with Kraftsman Clupak* paper, the tough, impact-resisting kraft with the built-in stretch—pioneered by West Virginia.

Whether you pack fertilizer, cement, flour, feed or chemicals, tougher WONDERWALL can save *you* money while reducing bag breakage. For the whole story, write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

*Clupak, Inc.'s trademark for extensible paper, manufactured under its authority.

West Virginia Pulp and Paper

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NEW MACHINERY

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Train on rubber proves haulage truck capacity booster

A PATENTED DEVELOPMENT for vastly increasing the productive capacity of a truck is the addition of one, two or more side-dumping trailers. Two sizes of these patented trains are available—15-ton trailer bodies for highway haulage and 25-ton capacity units for off-highway use.

The designers of this wagon train on rubber had the goal of providing maximum payload with minimum cost per ton by stepping up the load hauled by each truck driver with multiple trailers, and by keeping the dead weight of the trailers low with lightweight, high-strength aluminum alloys and all-welded construction.

Each trailing wagon can be side-dumped to either side. A control in the driver's cab controls the dumping mechanism on each unit. The bodies tilt to a steep 55 deg. dumping angle to throw the dumped material clear of the wheels. Three units can be dumped in less than 30 sec., according to the manufacturer, and it is not necessary to stop the train while dumping. Connection between the units is a slack-free, heavy-duty ball joint.

Highway trucks are powered with 256 hp. V-8 gasoline engines. It is possible to haul a total payload of 100,800 lb. up a 10 percent grade with this truck. The larger, off-highway trains are equipped with 300 hp. or 385 hp. diesel engines.

Since each wagon closely follows the track of the one ahead, the train assembly can navigate around short-radius curves. The entire highway assembly can make a complete circle in a 34-ft. radius. With loads distributed over a number of axles, wheel loadings are kept low. This feature reduces wear and damage to pavements or haulage roads. *Differential Co., Box 238, Findlay, Ohio.*

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17-ton crane

THIS MANUFACTURER'S line of shovels, cranes and draglines has been extended with the introduction of a 17-ton capacity unit. It will be available in a wide range of useful models including crawler, self-propelled or carrier mounted. A number of front end attachments can be provided—clamshell, dragline, crane, shovel and trench hoe.

The new unit will include a ball-bearing mounted superstructure for faster swing, lower center of gravity and increased thrust capacity for digging operations. Lubrication, inspection and maintenance time is said to be greatly reduced with these features. Sub-assemblies of the turntable can be removed for maintenance without disturbing other parts. *Little Giant Crane & Shovel, Inc., East 16th & Howard Dr., Des Moines 13, Iowa.*

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Nuclear density gauge

A SOURCE of radioactive energy and a sensing element are teamed to provide a method of measuring the suspended solids or the specific gravity of liquids flowing through pipe up to 8 in. diam. This new instrument performs reliably and continuously without contacting the liquid: It is ideal for measuring or sensing liquids or liquid slurries in remote or hazardous locations.

One part of the device holds a radioactive element whose gamma rays are directed through the pipe. A shielded cell on the other side senses the intensity of radiation and converts it to an electrical signal which is amplified and sent to a control center.

The instrument is completely safe. Both the source and the sensing cell are shielded. There is no induced radioactivity in either the pipe or slurry suspension.

Two models are available. One uses electrical zero suppression, the other uses a patented compensating cell which is said to give longer term stability. Both instruments measure spans as narrow as .15 sg. units with precision as small as .0015 unit. *The Ohmart Corp., 2236 Bogen St., Cincinnati 22, Ohio.*

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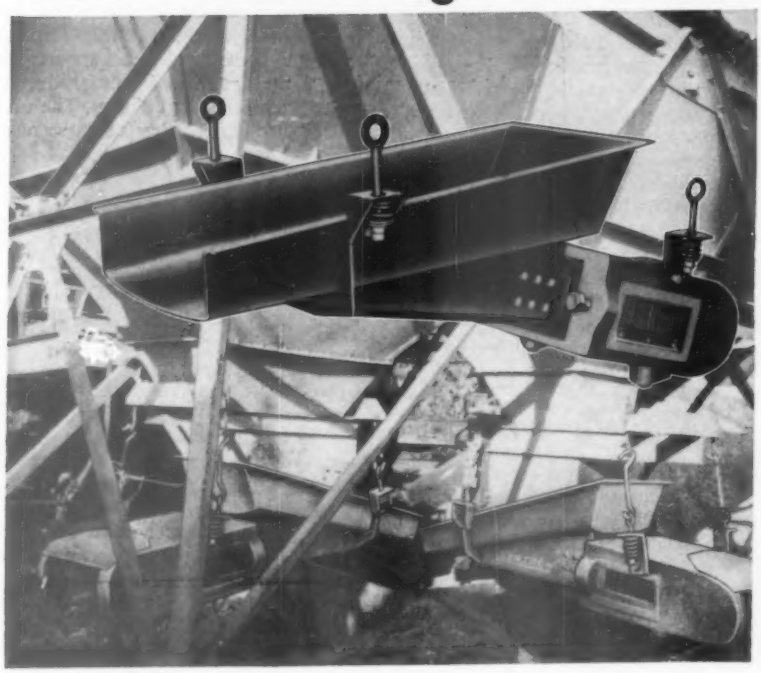
(Continued on page 178)

SYNTRON cost-cutting equipment of proven dependable Quality

feed stone at high TPH rates



SYNTRON *Vibra-Flow*

VIBRATORY FEEDERS

* * * feed rock, aggregate, sand and other bulk materials at rates from pounds to thousands of tons per hour.

SYNTRON Vibratory Feeders give you these features for lower cost production:

—dependable flow feeding of bulk materials to conveyor belts, crushers, screens, etc.

—instant flow control, the power of vibration is instantly controllable for more efficient material flow.

—durable and versatile, withstand heavy load shock and wear by abrasion. Compact, easily integrated into material handling operations.

—operation and maintenance economy—there are no mechanical wearing parts—no lubrication or periodic adjustments required.

Install SYNTRON Vibratory Feeders for the dependable, low cost handling of all your bulk materials.

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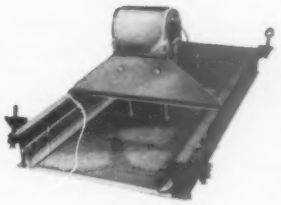
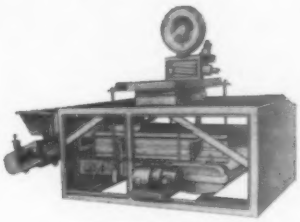
Other SYNTRON Equipment of proven dependable Quality



VIBRATING SCREENS



GRAVIMETRIC FEEDERS

ROTARY VIBRATOR CAR SHAKERS

TEST SIEVE SHAKERS

VIBRATORY PACKERS

(Continued from page 176)

Earth drills

ROTATING BUCKET EARTH DRILLS are available mounted on crawlers. Now that they are self-propelled and more maneuverable, these drills have greater value than ever for gravel prospecting and for drilling test holes in gravel reefs. They are also widely used to drill caisson pier holes and concrete footings.

Standard units are equipped with gasoline engine power, but diesel engines are available. Ample power is provided to do almost any earth drilling job—to make holes ranging from 12 to 120 in. diam. up to 200 ft. deep.

New features include built-in hydraulic jacks to stabilize and level the rig for precision drilling, a hydraulic dumping arm for faster, safer dumping and a kelley-bar crowd to put more pressure on the drill for greater penetration in dense formations. *Calweld, Inc., 7222 E. Slauson Ave., Los Angeles 22, Calif.*

Enter 308 on Reader Card

Rear dump hauler

WHEN HIGH SPEED, exceptional maneuverability and high capacity is called for in a rear dump hauler, this newly developed machine may prove to be the answer.

Top travel speed with full payload is 25 mph., with power supplied by a 336 hp. diesel engine and 4-speed torque converter transmission. With full hydraulic steering, the tractor can make full 90 deg. turns. It can make a non-stop turn fully loaded in a 34-ft. diam. circle.

Rated payload of the 23-cu. yd. high strength, heat-treated alloy steel body is 70,000 tons. Extremely fast and smooth, dumping is under the full control of the operator. The maker states that there is no sudden shock or impact when the rear dump body reaches maximum height or returns to the travel position. *Euclid Div., GMC, Cleveland 17, Ohio.*

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Bin vibrator

THIS NEW, long-stroke air vibrator was originally developed to keep wet, sticky iron ore moving through bins with conical bottoms. It should prove to be just as successful to handle the wet, sticky materials often stored in bins by rock products producers.

Outstanding feature of this vibrator is its long piston stroke. A 30-lb. piston strikes the side of the bin on a regular timed cycle to dislodge arched or compacted materials. The unit has one-piece construction, without assembly bolts to fatigue or stretch, and no separate striking plate. The piston is the only moving part, and the manufacturer states that it is not affected by the abrasive fines or moisture common in locations where the unit is needed.

The vibrator weighs 105 lb., measures about 12 x 16 in. and operates on air pressures between 45 and 65 psig. *National Air Vibrator Co., 435 Liberty Rd., Cleveland 13, Ohio.*

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Drill bit

THE UNUSUAL SHAPE of this new drill bit was designed to give faster, more efficient drilling of blast holes in hard rock. It is a 4-blade insert bit available in sizes from 4½ through 5⅝ in. especially designed for heavyweight, truck-mounted equipment.

Features of the design provide more cutting surface on the bottom of the hole and more gauge area in the hole. These result in smoother drilling, less

strain on the equipment and better drilling stability. Each bit is precision machined from high-alloy steel, heat treated and fitted with the best quality carbide inserts available. *J. T. Williams Co., 313 So. Third St., Tonkawa, Oklahoma.*

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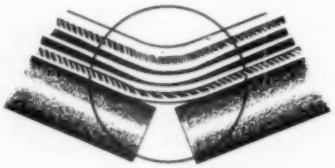
Deep troughing belt

HERE'S A CONVEYOR BELT that is flexible enough to be used with 45 deg. troughing idlers yet rugged enough to handle the heavy materials produced in the rock products industry. The use of deep troughing idlers on these ma-



terials gives producers the opportunity to get 25 percent more carrying capacity, or to use slower conveyors or narrower belts.

The unique ply construction of the conveyor belt apparently makes it possible to handle sharp, heavy materials on 45 deg. idlers. The outer plies, normally under greatest tension when the belt passes over the supporting idler, are constructed with a special high-strength synthetic fabric. It is specially woven and its elasticity is carefully controlled. The manufacturer guarantees against ply separation or cover parting at the idler flexing point during the life of the belt, when used with idlers up to 45 deg. *Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N.J.*

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Dust collector

A NEW multiple-compartment dust collector has been designed particularly for difficult dust collection problems, including high-temperature fume and dust collection. While the new unit was adapted primarily for use with glass fabric bags, it performs equally well with any type of filter fabric.

Dust is collected on the inside surfaces of the filter tubes. Cleaning action can be regulated by high-pressure air blasts from the equivalent of mechanical shaking down to gentle pulsations. There are no moving parts in the collector.

A small amount of reverse airflow from the fans partly collapses the tubes to drop adhering dust into collecting hoppers under the tubes. Mechanically operated airlocks withdraw the dust for disposal. *Pangborn Corp., Hagerstown, Md.*

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(Continued on page 180)

READ The Facts BETWEEN THE LINES!

NAYLOR Spiralweld pipe is easy to handle and install.

★

Its distinctive spiral-lock-seam structure provides a lightweight pipe without sacrifice of strength and safety.

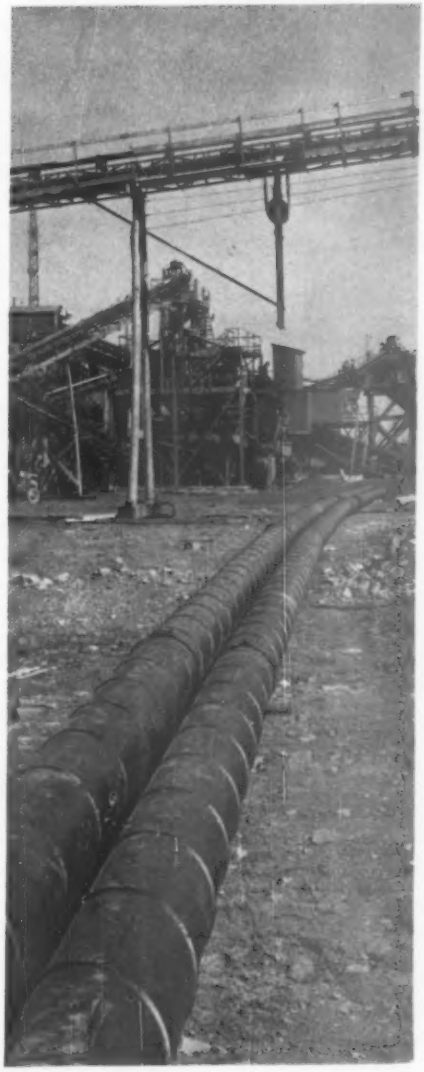
★

Lines are made up faster when you make connections with NAYLOR Wedgelock couplings.

★

For handling air, water, tailings or for ventilating lines, it will pay you to look into the NAYLOR pipe and coupling combination.

Write for Bulletin No. 59.



NAYLOR PIPE *Company*

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(Continued from page 178)

Crankcase monitor

HERE'S A MODESTLY PRICED instrument which can pay for itself in reduced engine wear and maintenance expenses. The Model DG meter detects changes in oil viscosity due to contamination by water, acids or suspended solids. It is useful summer and winter, since its accuracy is not affected by variations in crankcase temperature.

The meter's indicator tells at a glance the condition of engine oil, for either gasoline or diesel engines. It is easily read at any time, since the pointer stays on position at all times. Any change in the oil is sensed immediately to indicate clogged filters, broken gaskets or oil dilution. It can be a useful tool in any preventive maintenance program for engines. *The Gerin Corp., Avon, N.J.*

Enter 314 on Reader Card

Portable compressor

THIS NEWLY DESIGNED portable air compressor delivers 125 cfm. and incorporates a number of the latest engineering developments in compressor design.

These features include increased horsepower capacity and a regulator which matches engine speed to meet air demand; an automatic water circulating system insures that compressor and engine operate at constant temperature. The engine and compressor are protected from "dry starts" in cold weather by a hydro-shift clutch that can be disengaged at the touch of a finger.

Compressed air is delivered without pulsations or vibrations. Rotor blades can be inspected merely by removing 12 cap screws. There is no metal-to-metal contact between rotors, cylinders and end plates. The flow of oil for both lubrication and cooling is instantaneous. It does not depend on receiver pressure at any time. *Gardner-Denver Co., Quincy, Ill.*

Enter 315 on Reader Card

Single rotor impactors

A NEW LINE of large, high-capacity single-rotor impact crushers has been announced. The largest of the three units in the line with a 54 x 60-in. feed opening has a capacity of 1,500 tph. of hard limestone, according to the maker. Other units have 38 x 50-in. and 46 x 54-in. feed openings.

The extra-heavy single rotor provides stored energy for high inertia impact on the largest rock which can be worked into the feed opening. Experience in the field under production conditions has shown that the units will handle slabby material as well as wet, sticky and clayey stone without downtime. A specially-designed feed chamber in the machine effectively prevents bridging or arching of material above the rotor. *Rogers Iron Works Co., Joplin, Mo.*

Enter 316 on Reader Card

Portable bins

THESE PORTABLE BINS should prove useful to rock products producers who use weighing-shipping bins to load trucks. The newly developed 300-ton capacity shipping bin weighs about 30,000 lb. completely erected, but is made in three easily handled sections for quick assembly.

Each component is shop fitted before shipment to assure rapid and easy field assembly. Major component is the 14,000-lb. batcher section. It is 11 x 11 x 21 ft. and can be made up in two to eight compartments. It comes complete with all charging gates, gate mechanisms, scales, scale levers and control panel preassembled as a unit.

Extension bins above are made from ¼-in. sheet steel stiffened with angles. There are no ledges to catch and hold moisture. *The Fairfield Engineering Co., Marion, Ohio.*

Enter 317 on Reader Card

Portable generator features compact diesel engine

HERE'S A GENERATOR SET that looks more like a hot rod than a highly maneuverable power plant. While it was designed especially for standby power for jets and other big aircraft at the nation's airports, its speed and mobility makes it useful in other ways.

A compact diesel engine can generate up to 250 kva. at 60 or 400 cy. ac. The same engine moves the 4-ft. high, compact little vehicle and develops about 2,000 lb. drawbar pull to tow auxiliary equipment—pumps, compressor or welding equipment. *Stewart & Stevenson, Inc., 4516 Harrisburg Blvd., Houston, Texas.*

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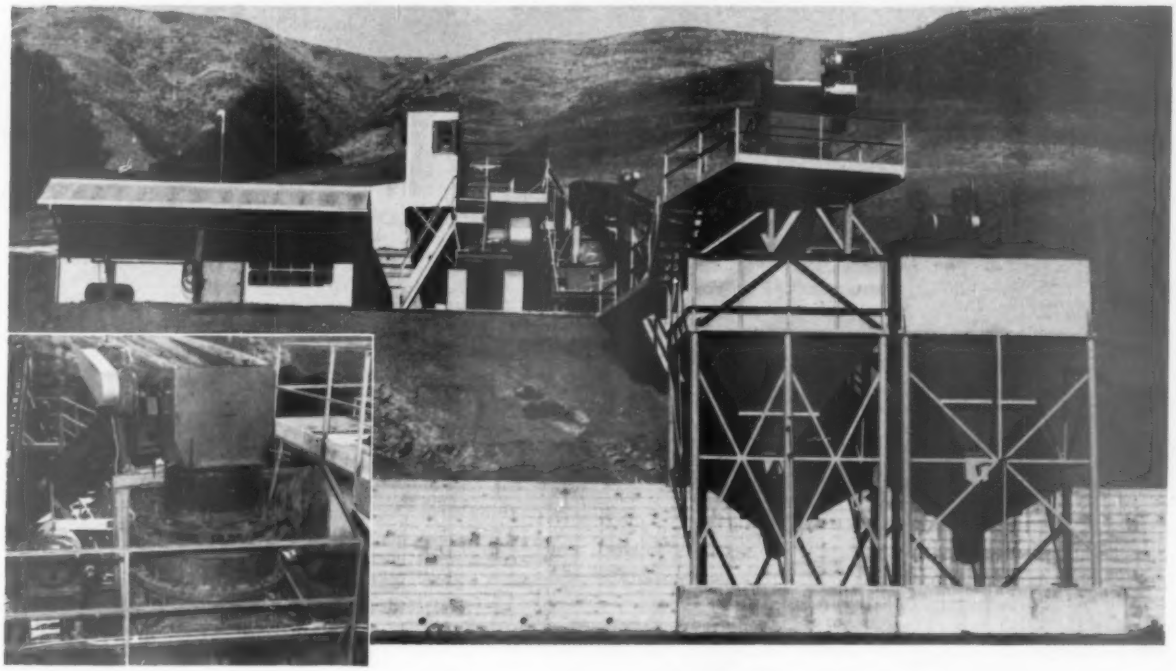
(Continued on page 182)

KUE-KEN® jaw and gyratory crushers for lasting economy in hard rock crushing



Greater capacity and far longer jaw plate and liner life feature the Kue-Ken crushers installed in this new, efficient crushing plant of Independent Construction Company, Oakland, California. Having profited from lowest cost-per-ton crushing for over 8 years with a previous Kue-Ken crusher, Independent made the new push-button plant an entire Kue-Ken installation complete with 36″ x 24″ primary jaw, 36″ gyratory, apron feeder, vibrating grizzley, 4 ft. x 10 ft. double deck Overstrom screen. Operating on the exclusive principle of "crushing without rubbing", Kue-Ken eliminates the main cause of premature jaw plate and liner wear. Power consumption is far less . . . power is used to crush rock, not to wear out parts. Kue-Ken jaw crusher mechanism operates in a sealed, dust-free crankcase lubricated by filtered oil to permit higher speeds for greater capacity and a more uniform product. Automatic flywheel release prevents breakage from tramp iron.

Write for Catalog

KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8387 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

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VANCOUVER, B. C.	Universal Equipment Co.
SALT LAKE CITY, UTAH	Lund Machinery Co.
SAN ANTONIO, TEX.	Closner Equipment Co.
LOS ANGELES, CALIF.	Garlinghouse, Fremon Co.
SAN FRANCISCO, CALIF.	Aggregate Engineers, Inc.
BISMARCK, NORTH DAKOTA	Midwest Equipment Co.
PHOENIX, ARIZ.	Read Machinery Co.
BUTTE, MONTANA	Hall-Perry Machinery Co.
PORTLAND, OREGON	Air-Mac, Inc. of Oregon

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.

Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

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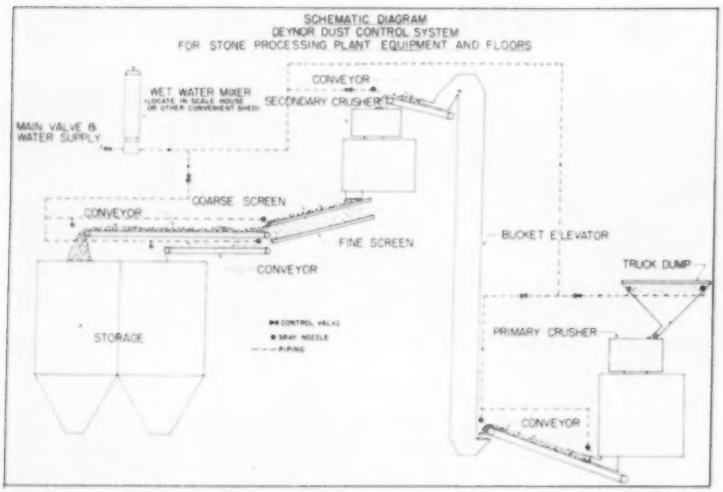
(Continued from page 180)



Dust control system makes water "wetter"

WATER CAN BE MADE "WETTER." When it is, its usefulness to control dust is greatly improved. A newly developed dust control system takes advantage of this fact to effectively suppress dust in crushed stone or crushed gravel plants. Complete control of dust is claimed at a cost of less than one cent a ton of product and adding less than ¾ of 1 percent moisture.

The entire system can be installed in an average plant for less than $175, and consists almost entirely of mixer, valves, nozzles and piping. No pumps, motors or storage tanks are needed since the system is fitted to an existing water supply.

In dry screening plants the wetted dust is removed with the crusher sand. In wet screening systems the added wetting agent improves the speed and efficiency of washing. The wetting agent can be used effectively to suppress dust above screens, crushers, belt conveyor transfer points and to control incidental dust. *Deynor Corp., 1 Depot Plaza, Mamaroneck, N.Y.*

Enter 303 on Reader Card

Spade-shaped shovel tooth provides efficiency, top production

QUARRY OPERATORS who produce large volumes of fine rock will welcome the high efficiency and extra production possible with a newly-perfected manganese shovel tooth. By partly filling the space between the narrow, pointed conventional bucket tooth, the maker claims that dipper capacity is greatly increased. Producers report that spillage of small stones is practically eliminated and cleanup around the quarry greatly improved. Digging is speeded up; at the same time tooth wear is sharply reduced.

The new tooth shape is not intended to replace standard, two-piece bucket teeth for heavy digging in blocky rock. But it is expected that it will prove to be most useful and valuable for high-capacity digging when there is a large amount of medium to small rock. *American Manganese Steel Division, 389 East 14th St., Chicago Heights, Ill.*

Enter 304 on Reader Card

New spray nozzle

THIS NEW SPRAY NOZZLE may prove to be the solution to many spraying problems for washing materials, dust control and for processes requiring liquids to be uniformly dispersed.

The new centrifugal type industrial spray nozzle is available in ¼, ⅜ and ½-in. sizes with male or female connections for standard pipe, and in brass, steel and stainless steel. Liquid capacities range from ½ to 10 gpm. at 40 psig.

There are no moving parts in the nozzles. Maintenance is easy, for each unit consists of an easily removable cap nut, an internal piece and solid body. *Wm. Steinen Mfg. Co., 43 Bruen St., Newark, N.J.*

Enter 305 on Reader Card

Carrier-mounted crane

A 65-TON carrier-mounted crane is now available. This heavy-duty crane is mounted on a carrier with 230-in. wheel base that travels at road speeds up to 37 mph. A span of 14 ft. between the front and rear axles provides weight distribution to meet the most stringent bridge restrictions. The unit is equipped with all-wheel brakes.

Power outriggers permit them to be extended to working position in less than 60 sec., according to the maker. They automatically level the machine and hold it in position on rough or uneven ground. To reduce road weight, the outriggers can be quickly unpinned and removed. The counterweight can be taken off with built-in hydraulic jacks. *The Thew Shovel Co., Lorain, Ohio.*

Enter 306 on Reader Card

Front-end loader attachment

THIS NEW FRONT-END bucket attachment was designed particularly for stockpile work. The 1 cu. yd. bucket is operated hydraulically and is self-loading. A control valve enables the operator to level the load.

The attachment can be mounted on utility tractors, but the self-loading feature permits the bucket to be independent of the traction of the machine on which it is mounted. Lifting capacity of the bucket is 3,000 lb., with breakaway capacity of 4,500 lb. *Henry Mfg. Co., Inc., P. O. Box 521, Topeka, Kans.*

Enter 307 on Reader Card

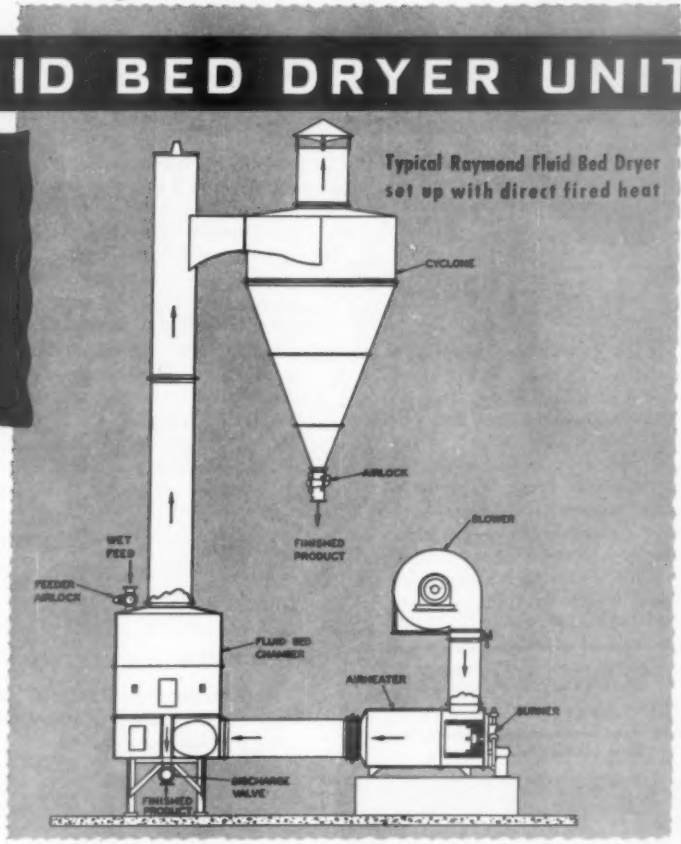
(Continued on page 184)

Note this NEW Raymond

FLUID BED DRYER UNIT

Recent addition to the Raymond line of Drying Systems.

Now available for the processing of various special products.



Typical Raymond Fluid Bed Dryer set up with direct fired heat

PRINCIPAL ADVANTAGES

1. High thermal efficiency
2. Small space requirements
3. Absolute minimum of moving parts (none in high temperature zone) helps to reduce maintenance
4. Gentle handling gives minimum degradation
5. Permits some degree of particle size classification
6. Accurate control of final H_2O
7. Continuous, automatic, dust-free operation

You will want to read about this new process.

WRITE FOR
RAYMOND
BULLETIN
eighty-eight

Raymond started development work on the Fluid Bed type of dryer in 1950 as a complement to the well known line of Flash Drying Systems.

This broadened the range of dryers for handling problems where a very minimum of crystal breakage is required, as well as in processes where appreciable retention time is desired.

The first commercial size Raymond Fluid Bed Dryer was installed in 1953 on a problem requiring minimum crystal breakage. Since then, additional units have been installed by themselves or in conjunction with Flash Drying Systems.

Salt, gilsonite, synthetic resins and organic crystals are being handled in these units. Successful test work has been conducted on a variety of other materials.

With the broadened line of drying units now available, it is even more important to consult Raymond engineers when your drying problems come up. A Raymond Fluid Bed or a Flash Dryer could well be the best solution to your problem.

COMBUSTION ENGINEERING, INC.

Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

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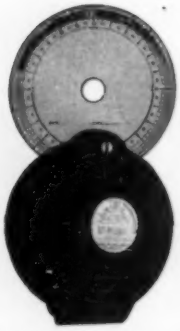

Every minute of busy and idle time is recorded on tamper-proof charts.

Servis Recorder lets you know if equipment is busy or idle!

Can Save You Thousands

This simple $40 instrument bolts to any shovel, grader, haul truck or other machine. It makes a record of when equipment is busy and when it is idle. Now you can know exactly how busy every piece of equipment has been kept every day of the week even when you're not around.

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The SERVICE RECORDER Co.
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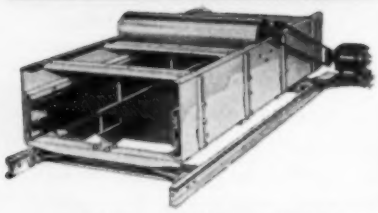

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UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

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NEW MACHINERY

(Continued from page 182)

Off-highway trucks

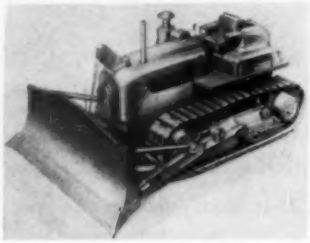
A NEW SERIES of heavy-duty off-highway trucks is available to rock products producers in a choice of gasoline, diesel or LP gas powered engines. Six basic models in both four and six wheel design offer weight ratings ranging from 46,000 to 73,000 lb.

Every component of the new truck line has been designed particularly for severe off-highway service. Design features include double-channel heat-treated steel framework, heavy-duty brush guard, a choice of two heavy rear axles and diamond plate steel fenders. Power equipment is standard on all models. *International Harvester Co., 180 No. Michigan Ave., Chicago 1, Ill.*

Enter 319 on Reader Card

New tractor

Note: This item appeared with an incorrect illustration in our December issue. Pardon our slip.



A GIANT NEW CRAWLER tractor is in production which is rated at 211 net hp. This model, the C-6, is the culmination of the maker's 5-yr. testing development program on proving ground and in productive operation.

All major components are out in the open, easily accessible for inspection and maintenance. Its diesel engine cooling system is rear-mounted to improve operator visibility and to permit close coupling of front end attachments. An outstanding feature is a torque converter with semi-automatic transmission that eliminates the master clutch. Speed changes are made under full engine power.

Bare operating weight is about 42,000 lb. with top speed nearly 8 mph. Track gauge of the 15-ft. machine is 78 in. with standard 22-in. wide shoes. *Euclid Div., General Motors Corp., Cleveland 17, Ohio.* END

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A NEW BOOK BY
James A. Nicholson

GIVES YOU THE SCORE

"Ready Mixed Concrete", is an historical, authoritative account of one of the fastest growing industries in the world.

Written especially for people in the *Ready Mixed Concrete Industry* the book is a harvest of factual information on every fundamental phase of the business.

Give a copy to every employee who has a hand in YOUR reputation for quality mixes, and in YOUR profits. Order your copies today.

Single copies only $5.00 each. Five to Twenty copies $4.00 each.

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MANUFACTURERS NEWS

Humor can help you sell your men on good tractor upkeep

HUMOROUS CARTOONS to be used in "selling" proper tractor maintenance are being offered by J. I. Case Co. The four-color, 11x13-in. posters contain no advertising and are suitable for tacking on field shacks, shop walls and bulletin boards, Case reports. Keyed to seasonal problems, the cartoons show typical job situations and give a lesson in a humorous, enjoyable manner. Copies are free to producers, and a new one will be sent each quarter.

HEY SPEEDY — it froze up last night — ya better thaw them tracks loose from the ground before you start this morning
HORSE FEATHERS — this ain't no sewing machine you know, — it ought to break out of a little frost —
VROOM
WAIT! DONT TRY IT!
HOLD IT!
HOL-
TOO LATE
SOB
I TOLD HIM!
SOB
SOB
SOB
SOB
I TOLD HIM!
McGAN

Operating, Maintenance school set by Iowa Mfg.

IOWA MANUFACTURING CO., Cedar Rapids, Iowa is holding its annual Cedarapids Maintenance and Operation Conference. Originated in 1946 as a service to aggregate producers, bituminous paving contractors and Iowa's dealers, the conference offers practical information on preventive maintenance, maintenance procedures and correct operating methods.

Three sessions will make up the 1960 conference: January 11 through 15 on aggregate producing equipment; January 18 through 22 on bituminous mixing and paving equipment; and January 25 through 29 a service school for Cedarapids dealers and their service personnel. The sessions are open to all producers, whether Cedarapids equipment owners or not. They will feature informal discussions and question-answer periods rather than lectures and tests, Iowa Manufacturing announces.

Macdonald Engineering names four vice presidents

MACDONALD ENGINEERING CO., Chicago, specialists in design and construction of portland cement plants, has announced the election of four new officers. They are N. B. Thomsen, executive vice president, J. W. MacDonald, Jr., vice president and secretary, O. L. Newhouse, vice president, and R. C. White, vice president.

Mr. Newhouse has been chief engineer, and Mr. White, electrical director of the firm.

Kaiser Chemicals names operations, sales chiefs

JOSEPH F. KNIGHT is new manager of operations for the Kaiser Refractories & Chemicals Division, and Charles A. Smith has been named to coordinate division research and product development, technical services, engineering and raw materials.

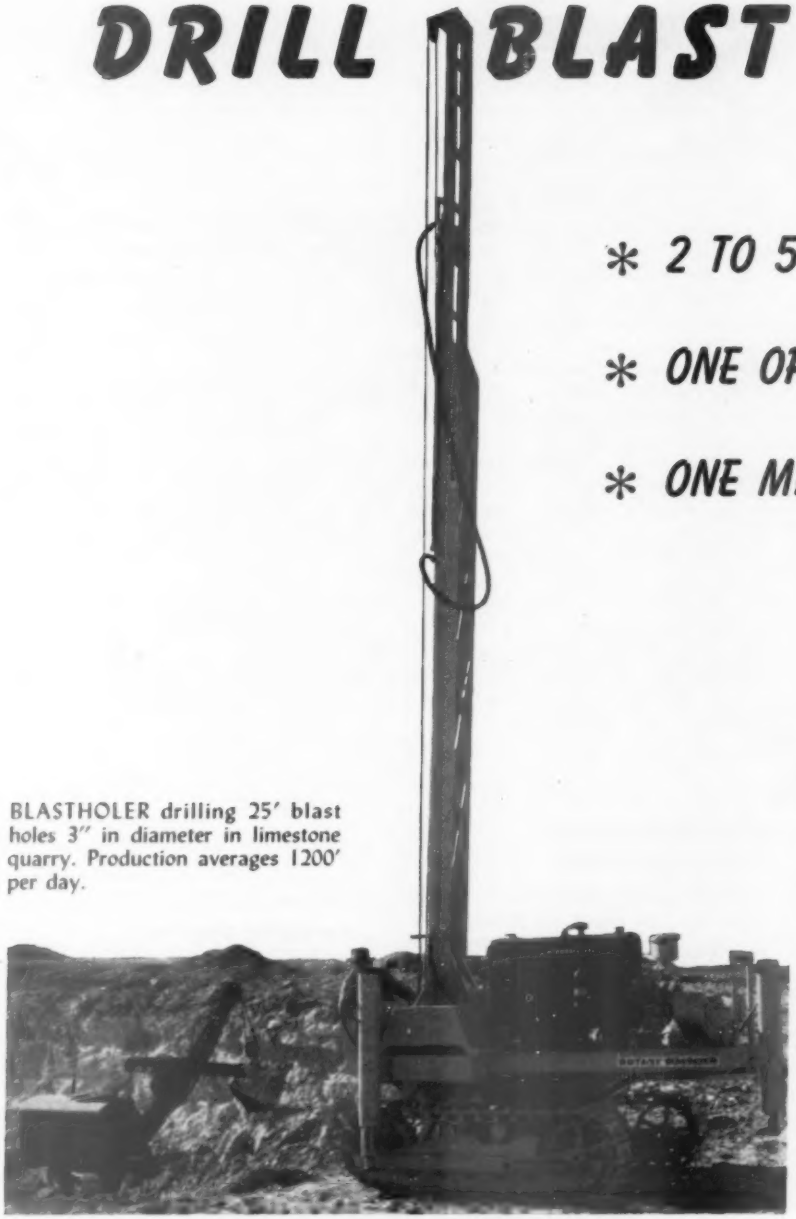
A civil engineer, Mr. Knight has experience with Kaiser in making cement, magnesium and refractories. Mr. Smith was one of the founders of Mexico Refractories, with which Kaiser Chemicals merged in 1959.

General sales managers also have been appointed by the Division. L. A. (Andy) Harrison is new Eastern Division general sales manager, Jack T. Putnam is new Western Division general sales manager, and Hal F. Randolph is new Central Division general sales manager.

(Continued on page 188)

DRILL BLAST HOLES

* 2 TO 5 TIMES FASTER
* ONE OPERATOR
* ONE MACHINE



BLASTHOLER drilling 25′ blast holes 3″ in diameter in limestone quarry. Production averages 1200′ per day.

BLASTHOLER

A self-propelled rotary drill, the BLASTHOLER is mounted on tracks or dual pneumatic tires — covers terrain like a bulldozer. The BLASTHOLER requires only one operator — carries its own air for cleaning blast hole. In limestone quarries meeting highway specifications, the average time for 20′ holes is 3 to 4 minutes. Many BLASTHOLERS have drilled more than a million feet within a 2-year period. Chances are the BLASTHOLER can improve your production record and save you money, too! *Contact your nearest dealer for a cost-cutting demonstration today!*

BLASTHOLER DEALERS

The W. W. Williams Co.
Columbus, Ohio

Reid-Holcomb Co., Inc.
Indianapolis, Ind.

Watson Equipment Co., Inc.
Pittsburgh, Pa.

Ray C. Call Co., Inc.
South Charleston, W. Va.

Illinois Road Equipment Co.
Springfield, Ill.

Williams Tractor Co.
Louisville, Ky.

Hi-Way Machinery Co.
Dallas, Texas

Bublitz Machinery Co.
North Kansas City, Mo.

James W. Bell Co., Inc.
Cedar Rapids, Iowa

Anderson Equipment Co., Inc.
Omaha, Neb.

Wylie-Stewart Co., Inc.
Oklahoma City, Okla.

Wisconsin Drilling & Equipment Co., Inc.
Madison, Wis.

Contractors Machinery Co.
San Antonio, Texas

DRILLING ACCESSORY AND MANUFACTURING COMPANY, INC.
2006 South Industrial Boulevard
Dallas, Texas

Enter 1492 on Reader Card

(Continued from page 186)

C. M. Basile

D. W. Lehti

Link-Belt Speeder gets new president in C. M. Basile

C. M. (CAL) BASILE is new president of Link-Belt Speeder Corp., Cedar Rapids, Iowa, maker of power cranes and shovels. He succeeds D. W. Lehti, who is retiring after 25 years with the firm.

Mr. Basile has been a director and vice president in charge of operations since coming to the Link-Belt Co. subsidiary in 1950. Previously he worked in Link-Belt plants in Chicago and Philadelphia, has been with the firm since 1928. In 1959 Mr. Basile was elected executive vice president of the Cedar Rapids plant and president of Link-Belt Speeder (Canada) in Woodstock, Ontario.

Identified with the crane-shovel industry since 1912, Mr. Lehti became associated with L-B Speeder in 1925 when he and a business partner acquired the New York distributorship of Speeder Machinery Corp. Joining that firm as sales representative in 1934, he became assistant plant manager in 1939 when it was acquired by Link-Belt.

He became vice president of Link-Belt Speeder in 1946 and president in 1947.

Euclid service program trains 1,000th customer

EUCLID DIVISION, General Motors Corp. recently passed a milestone by training its 1,000th customer in the latest methods of servicing and repair of the company's earthmoving equipment. The 1,000th Euclid dealer serviceman to attend the classes also was honored.

In the past 10 years more than 6,000 men have completed courses on Euclid equipment, at schools in the field and at General Motors Training Centers across the country. Schedules of the courses, open to all Euclid owners and personnel, may be obtained from Euclid dealers.

GMC's Euclid Division also made news recently when it opened its new tractor plant at Hudson, Ohio, near Cleveland. The firm's fifth manufacturing plant in the Cleveland area, the 662,000-sq. ft. facility will permit boosted production of Euclid's two crawler tractors—the new 211-hp. C6 and the twin-engined TC-12 with 425 hp. The new plant also will provide higher manufacturing efficiency and quality control, Euclid said.

Chain Belt acquires Carrier Conveyor

CARRIER CONVEYOR CORP., Louisville, Ky., an important maker of vibrating conveyors and feeders, has been acquired by Chain Belt Co., Milwaukee, Wis. Subject to approval of the Internal Revenue Dept., the acquisition adds about $3 million to Chain Belt's annual sales of $66 million.

Founded in 1946, Carrier Conveyor has grown until today it states that it is the nation's leading maker of vibrating conveyors. The firm's acquisition gives Chain Belt a new line to add to its products, including sprocket chains, power transmission machinery, bulk materials handling equipment and self-aligning roller bearings. Further, the firm makes roadbuilding equipment and concrete central-mix and transit mixer equipment.

Ziegler is vice president of General Conveyor

HAROLD A. ZIEGLER, formerly a sales engineer, has been named vice president and assistant general manager of General Conveyor Inc. of Northern California. He replaces B. P. Sandsto, who is returning to Norway. Mr. Ziegler received a degree in mechanical engineering from the University of Nevada, and has since had much experience in designing material handling installations.

Buys shovel firm

HAROLD C. SHOTT, Cincinnati and Cleveland industrialist, has purchased the Bay City (Mich.) Shovel Co. for an amount estimated at $7 to $8 million. The company manufactures heavy highway and construction building equipment.

To tip scales here is weighty problem

IDEAL CEMENT COMPANY'S Devil's Slide, Utah and Trident, Montana plants each will soon be using three big combination truck and track scales which maker Howe Scale Co. terms "the largest lever scales ever made." Having a gross capacity of 150 tons each, the scales are 170 ft. long and 10 ft. wide. They will check bulk cement loads placed in cars and trucks at the two plants.

END

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The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

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Buy WILFLEY for Cost-Saving Performance

WILFLEY centrifugal PUMPS

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Enter 1498 on Reader Card

LORAIN MOTO-LOADER SCORES AT 40-ACRE PIT "SPEED OF TRAVEL AND LOADING IMPRESSIVE"

Working on various stockpiles at this 40-acre pit, this 2-yard Lorain ML-157 Moto-Loader loads trucks of 5 to 35-yard capacity. "Speed of travel and loading impressive"—that's how the Gillissee Construction Company, Grand Rapids, Michigan, sums up the profit-building performance of their fast-moving Moto-Loader.

Wherever they are used, Moto-Loaders have the speed and stamina to deliver impressive results. It's Lorain's *balanced* design that makes the big difference in output and profits.

WEIGHT BALANCE. Lorain puts the center of gravity low where it belongs . . . distributes weight on axles for ground-hugging travel without bounce or teeter under heaviest loads.

CONTROL BALANCE for co-ordinated work "flow." One-foot control of direction and speed . . . power transmission. One hand can always be on the steering wheel . . . the other hand always free for other operations.

POWER BALANCE matches hydraulic capacity, engine size and transmission of power to wheels for steady, positive travel, crowding, digging . . . for smooth high-production loading cycles. No wasted power—no wheel spinning.

Besides the ML-157 with its 7,000-pound carrying capacity, there's the ML-153 with a 6,000-pound capacity. For details, contact your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

One-foot travel control boosts payloads . . . frees operator's hands for steering, bucket control and other operations. By pivoting his foot between two adjacent pedals, operator controls both forward and reverse travel and acceleration.

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ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

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May .....Nov. .....
June .....Dec. .....

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9-W Bucyrus Erie Diesel Drag, 165', 12 yd.
7-W Bucyrus Erie Elec. Drag, 140', 7 yd.
7400 Marion Diesel Drag, 175', 13 yd.
625 Page Diesel Drag, 150', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 100', 4 yd.
1601 Lima, 4 yd. Shovel/Drag
3900, 3500 & 3000 Manitowoc Cranes
5560 Marion 26 Yd. Elec. Shovel
5480 Marion 18 Yd. Elec. H. L. Shovel
151-M Marion 7 Yd. Elec. Shovel
170-B Bucyrus Erie 6½ Yd. Elec. Shovel
4161 Marion 6 Yd. Elec. Shovel
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120-B Bucyrus Erie 4 Yd. Elec. Shovel
4500 Manitowoc 5 Yd. H.L. Shovel
1201 Lima 3½ Yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
54-B Bucyrus Erie Standard & H.L. Shovels
Model T-650 Reich Heavy Truck Mounted Rotary and Down-The-Hole Drill
Ingersoll-Rand Truck Mounted Drillmaster
Joy Truck Mounted Rotary Air Drill, 6" Holes
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2—Abbe 5' x 16' Ball Mills.
3—Bucket Elevators; 25', 32', 30'.
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1—Bemis Automatic Bag Packer, Sewing Machine, Conveyor and Flattener.
1—Deep Well Pump, 75 HP Motor.
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18—Steel Buildings 20' to 80' wide x 60' to 140' long.
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8—Redler Conveyors; 30', 35', 40', 75', 80' and 125' long.
200'—Screw Conveyor, 9" and 12".

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American Ring Roll Crusher
Williams & Gruendler Hammer Mills
Conical Ball Mills; Hi Side Mills
Raymond Mills; "00", "0000", #10, 47, 40
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Day Autoclean-Rotoclone Dust Collectors
Screens and Sifters by Tyler-Hummer, Patterson, Day, Williams, Allis-Chalmers
Dings and Williams Magnetic Separators
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Baker-Perkins Slurry Thickener

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STerling 8-4672

36"x48" Traylor Jaw Crusher
15"x36" Diamond Jaw Crusher, BB
36"x12' Stephen's Adamson Feeder
30"x36" Traylor Blake Jaw Crusher
28"x36" Traylor Blake Jaw Crusher
10"x36" Buchanan Blake Jaw Crusher
12"x24" Buchanan Blake Jaw Crusher
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24"x36" Farrel 14B Blake Jaw Crusher
1—48"x72" Buchanan Jaw Crusher
25"x36" Telsmith Overhead Eccentric Jaw Crusher
18"x32" Telsmith Overhead Eccentric Jaw Crusher
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2—28" Telsmith Inner cone Crushers
2—10"x40" Good Roads Jaw Crusher
16" Telsmith Gyratory Crusher
25" Telsmith Gyratory Crusher
13" Telsmith Gyratory Crusher
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HM-05-CF Pettibone Mulliken Hammermill
2—13"x30" Farrell Jaw Crushers
36"x8' feeder
22"x40" Tripple Roll Pioneer Crusher
½ yard Link Belt Shovel Front.
1—¾ yd Drag Line Bucket

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6—Ingor Rand, 1350, 2200 & 3800'
DIESEL ELEC. LOCOMOTIVES & CRANES
4—65 ton Whitcomb 2—25 ton & 2—20 Ton
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3' x 20', 5' x 25', 6' x 72', 9' x 160', 10' x 200', 5' x 35' Ruggles-Coles XA-8 Dbl. Shell.
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5' x 10', 6' x 12" & 7' x 15' Rod Mills
2—KVS 5' x 8' Ball Tube Mills Air Swept
2—No. 77 & No. 54 Marcy Ball Mills
2" x 6" Sturtevant Lab. Jaw Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
30" x 36", 36 x 42 & 48 x 60 Jaw Crushers
25B Telsmith Primary Breaker
20" x 36" & 24" x 36" Pioneer Jaw Crusher
2A Cedar Rapids Port. 24 x 16 Crusher
14" x 28" New England Road Machinery
15x24 & 10x36 Cedar Rapids Jaw
36" & 42" Stedman Disintegrators
36" x 54" Buchanan Jaw Crusher
Bradley Improved Hercules Mills (3)
#5057 Raymond 5 Roll Highside Mill
4' x 10' Tyler Hummer DD Screen
3—200 HP & 160 HPSD. Ottumwa Elec. Hoists.
ELEC. WHIRLEY CRANES
2 Amer. R20-60 Ganty 139' Boom

WANTED TO BUY
KILNS—DRYERS—CRUSHERS
R. C. STANHOPE, INC.
80 E. 42nd St., N.Y. 17, N.Y.
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SPECIALS

#1, #0 Raymond Mills
6'-5"x100' & 6'x120' Kilns
Complete Lime Hydrating plants.

CRUSHERS

1—48" x 60", 42" x 40", 30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.

2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.

1—6", 10", 16", 20" McCully Superior Gyratory Crushers.

No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

5'x22', 6'x22', 7'x24'

DRYERS

8½'x65' & 8'x60

W. P. HEINEKEN, INC.
50 Broad St., N.Y. Tel. Wh. 4-4236

Machinery Center Inc.'s
MACHINERY SPECTACULAR

Round Mountain Gold Dredging Corp. Plant — Round Mountain, Nevada

1—Brush, belt, 42", SA, (New)
1—Bowl, Knudsen
2—Boiler, Economic, 60 HP oil fired, with blowers, condensate pumps, tanks, etc.
1—Ball Mill 2 tons, New
1—Barrel, Amalgamation, 24"x48"
7,000 FEET OF BELT CONVEYORS
1,356 FEET OF NEW BELT
LARGE LOT OF SPARE PARTS
1—Conveyor, 60" x 150' center to center belt, with steel framework, 100 HP gearmotor.
1—Conveyor, 42" x 1250' center to center belt, with steel framework, two 100 HP gearmotors.
1—Conveyor, 42" x 625' center to center belt, with steel framework, stacking tower, 200 HP motor and speed reducer.
1—Conveyor, 36" x 225' center to center belt, 100 HP gearmotor, variable speed drive.
1—Conveyor, 36" x 500' center to center belt, 100 HP motor & speed reducer
1—Conveyor, 36" x 645' center to center belt, two 100 HP motors & reducers.
1—Conveyor, 42" x 870' center to center, trailing belt type with movable stacker & 36" x 70' center to center stacking conveyor. One 100 HP gearmotor, two 20 HP motors & reducers.
1—Conveyor, 36" x 50' belt conveyor with 20 HP motor, steel frames.
3—Conveyors, 36" x 50' belt conveyor with 7½ HP gearmotors, steel frames.
1—Conveyor, 1800' complete, 42", (Less Belt)
1 Lot—Conveyor parts, including 42" conveyor tables, 60" troughing idlers, head & tail pulleys, 42" troughing idlers, 42" return idlers, 36" troughing idlers, 36" return idlers. Tremendous stock, write for complete inventory.
1356'—Conveyor, 42" Belting, 5 ply, new.
1—Classifier, Dorr Duplex, Rake, 5' x 23', DFSX, with 5 HP motor.
1—Compressor, IR type 40, with 50 HP motor
1—Crusher, Braun Chipmunk, with 2 HP motor, 2¼" x 3"
1—Crusher, Braun Chipmunk, less motor, 2¼" x 3"
1—Crusher, 36" x 42" Birdsboro-Buchanan Jaw with 100 HP motor & starter.
1—Feeder, reciprocating plate feeder, SA, 3' x 6'
1—Feeder, belt, ore, Deco, 12" x 2'6"
1—Feeder, Pan, Jeffrey No. 5
1—Furnace, DFC, double muffle assay, with blower
1—Furnace, gold melting
1—Filter, Deco pressure, 12" x 12"
3—Gates, chute, hydraulic operated
1—Gate, lifting device, electrified, on thickener overflow
1—Generator set, 50 KW, Cat. diesel, (like new)
1—Generator, 2 KVA, Koehler light plant
1—Hopper, Truck Dump complete belt loading facility with grizzley & Bin, Hydraulically operated, with ConveyCo reciprocating plate feeder, 10 HP gearmotor
1—Hoist, Monorail, lift, P & H, 1 ton, Electric
1—Hoist, Monorail, lift, 2 HP
1—Hoist, Wright lift, 3 HP, Electric
1—Hoist, Electric lift, ½ HP
3—Hoists, Budgit, Electric ½ Ton
1—Hydroseparator, 36' x 10' Process Engineers, Steel tank
2—Hydroseparator, 24' x 8' Process Engineers with Steel tank and 7½ HP Vangearmotor

170 B. Bucyrus Erie Elec. Shovel

14—Jigs, Yuba, 4 cell, 42" x 42", Model M-8 with gearmotors
1—Jig, Yuba, 2 cell, 42" x 42", Model M-8, with gearmotor
4—Motor, gearmotor—100 HP Westinghouse
1—Mill, Marcy Ball, 5' x 10', with 100 HP motor & controls
1—Mill, Laboratory Ball, 14" x 14" x 24", with 2 HP motor
1—Mill, Laboratory Ball, 12" x 18" with motor & drive
1—Magnet, head pulley, Dings, 16"
15—Tons Rail, 40-50 lbs.
ALL SIZES PIPING, VALVES
1—Pump, viking oil, with motor
2—Pump, sump, Cascade, with 30 HP motors
2—Pump, sand, NLOR, A.C., 6 inch, with 30 HP motors
2—Pump, Yuba, water pump, 14", with 125 HP motor and controls
1—Pump, sand, NLOR, A.C., 6 inch, less motor
5—Pumps, diaphram, Dorrco duplex, 6", with motors
2—Pumps, diaphram, Dorrco duplex, 8", with motors
1—Pump, Yuba, water pump, 10" (bare)
1—Pump, Worthington, Centrifugal, 10 HP
1—Pump, Fairbanks Morse, Booster pump, 300 HP motor
1—Pump, Fairbanks Morse, Booster pump, 200 HP motor
1—Pump, Faribanks Morse, motor pump, 20 HP motor
2—Pumps, Byron Jackson, motor pump, one 15 HP, one 25 HP
1—Pump, Wintroath Deepwell pump, 100 HP motor
1—Pump, Worthington, Deepwell pump, 100 HP motor, with special slip clutch
1—Pump, Byron Jackson, Deepwell pump, 30 HP with bowl assay.
2—Pulverizers, Braun motorized, 2 HP motor
1—Pan, Bendan Pan to grind Amalgam, 2 HP motor
4—Sand dewatering wheels, ConveyCo, w/ drives
1—Stacker, stockpiling 30" x 60' Stacker Conveyor
1—Speed reducer, for 100 HP motor
1—Screen, Trommel, 24" x 6'
1—Screen, Trommel, 9' x 54'6" with 100 HP slip ring motor, steel screen sections.
4—Screens, 4' x 12' Tyler Ty-Rock, F-600 Single deck 10 HP motors
1—Shot, separator, with belt feeder, hopper, magnetic head pulley
2—Splitters, sample
1—Scale, warehouse platform, 1000 lbs.
1—Scale, gold balance, 1-500 mg. Heusser
1—Scale, Ainsworth balance, Analytical
6 Tons—Shot, jig
1—Receiver, vertical air, 4' x 7'
TOOLS, SHOP EQUIPMENT
1—Threader, pipe and belt, 2" Reliance, with gearmotor
1—Grinder, pedestal, 12", 3 HP motor
1—Welder, portable, gasoline, 300 amp
1—Welder, portable, gasoline, 300 amp
2—Welder, 300-400 amp Lincoln shield ARC, DC
2—Welder, 200 amp, General Elec., D.C.
1—Acetylene generator, 50# capacity
1—Lathe, LeBlonde, 28" swing, like new
1—Shaper, 20" Cincinnati
1—Drill press, upright
1—Grinder, bench, 10", 220-440v
1—Automotive valve grinder
1—Threader, pipe, 4" cap., 3 HP motor
1—Air compressor, DeVilbiss, ¼ HP, 115V, Motor.
1—Air compressor, portable, LeRoi-Rix, 50 HP slip ring elec. motor
1—Air compressor, Quincy, 20 HP motor
1—Vulcanizer, 42" belt
1—Vulcanizer, patcher, 12" x 14", Heintz
1—Cement mixer, Jaeger, 10S, no-tilt
1—Lot misc. portable tools, drills, etc.
1—Thickener, Dorr traction type, 250' dia., x 14'4½", Type MC concrete tank, 7½ HP drive
2—Tables, small Wilfley, Laboratory
68—TRANSFORMERS, 3KVA TO 833 KVA VARIOUS SWITCH GEAR
3—Transformers, 833 KVA, 55000 volt primary to 2400-4160Y, with complete substation equipment.
3—Transformers, 250 KVA, 2400 volt to 480 volt, 1 ph 60 cycle, (mill sub-station)
1—Transformers, 150 KVA, 3 phase 2400 to 240-480 volt, with switch gear
3—Transformers, 100 KVA, 2400V to 240-480V, 1 ph, 60 cycle with substation switch gear
24—Transformers 75 KVA, with switchgear, 2400 to 240-480V
16—Transformers, 37½ KVA, with switchgear, 2400 to 240-480V
1—Transformers, 25 KVA, 2400 to 120-240V, with switchgear
8—Transformers, 15 KVA, 2400 to 120-240V, switchgear
2—Transformers, 5 KVA 2400 to 120-240V
7—Transformers, 3 KVA 2400 to 120-240V
1—Tank, water storage, 16' x 16'
1—Weightometer, Merrick, for 36" belt
OVER 250,000 FEET OF WIRE & CABLE
1000'—Wire, no. 4 & 6 cable for power shovels
18—reels wire, misc sizes, elec. cable
4—miles wire, power line, aluminum wire
18—miles wire, power line, 55,0000 volt, copper conductors
4-5—miles wire, power line, (servicing camp)
ROLLING STOCK, SHOVELS, SLUSHERS, ETC.
1—I/R Slusher Hoist, 3 drum, 30 MNM3C, electric driven
1—Shovel, 170 B, Elec. 7 yd. Bucyrus Erie
1—Shovel 54B, Diesel, 3 yd. Bucyrus Erie
1—Dragline, 54 B, Diesel, Bucyrus Erie, 2½ yd.
1—Dragline, 111 Marion, with shovel attachments, 3½ yd.
1—Scraper-Loader, 8-10 yd.
1—D-8 Cat., with Hyster loader, 2 U series
1—D-8 Cat., with Dozer Blade
1—Winch, Hyster, logging, for D-8
2—Trucks, Jeep
1—Truck, pickup, Chevrolet
1—Truck, flat bed
1—Truck, fuel

For Complete Listing, Price, Etc.

Phone Wire Write

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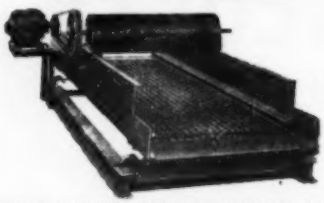
BONDED® VIBRATING SCREENS

PROMPT SHIPMENT OF ALL MODELS

GENERAL DUTY SCREENS

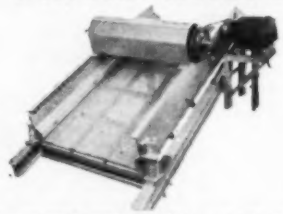


PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

For the accurate and economical screening of sand, gravel, crushed stone, ores, broken rock, slag, clay and cement products and lightweight aggregates. All Bonded Screens built of structural steel, welded and reinforced with additional members on all points of strain and factory tested and balanced. Available in enclosed models where dust and flying particles need to be contained. For almost any type of screening operation, wet or dry.

Priced from $443

SPECIAL SERVICE SCREENS

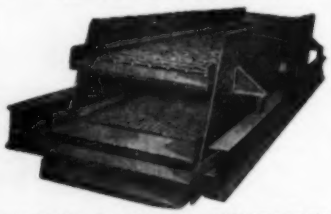


WRITE FOR BULLETIN #1224 **TYPE C**

For scalping middle-range pieces and accurate sizing of fines and above listed products but where quantity and feed do not warrant a larger capacity, heavy duty model. Medium to heavy construction. Can also be suspended from four steel cables and springs for portable or temporary installation. Vibration remains in working screen body. No shaking of tipple, building or platform.

Priced from $487

HEAVY DUTY SCREENS



FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

For high tonnages, heavy scalping and multiple sizing of such minerals and industrial products as handled by above models. No dead spots. Springless live-rubber mounting of screen body controls vibration. Screen cloth and plate in all models reversible for longer life. Their finished edges prevent plates from splitting and cloth from ravelling.

Priced from $1620

BONDED SCALE AND MACHINE COMPANY

128 BELLEVUE COLUMBUS 7, OHIO

PHONE: Days. HI 4-2186 Evenings: AX 1-2213

QUARRY EQUIPMENT

Cedarapids Jr. tandem crushing plant, 1036 jaw.
Cedarapids 6C, 1236 twin jaw portable secondary.
Cedarapids 1236 twin jaw crusher.
Cedarapids 1216 twin jaw crusher.
Cedarapids 1036 Jaw Crusher. Reconditioned.
Cedarapids 2033 hammermill. Slightly used.
Cedarapids 4' x 14' 2-deck screen. New warranty.
2—Cedarapids 4' x 12' 3-deck screens. Rebuilt.
Cedarapids 4' x 12' 3-deck screen. New warranty.
Robins 4' x 9' triple deck screen.
Pioneer 4' x 8' double deck screen. Rebuilt.
Telsmith 3' x 8', 3-deck inclined screen.
Aggregates 4' x 14', 3-deck inclined screen.
54" dia. x 23' lg. revolving screen. As is.
4' x 6'6" heavy duty reciprocating feeder. As is.
Cedarapids 42" x 10' apron feeder.
Cedarapids 30-S, 3-compartment charging hopper, apron feeder, bucket elevator. New.
27½ ton, single-compartment 8' x 12' bin.
Eagle 36"x20' double log washer. Good.
McLanahan & Stone 8"x30' double log washer.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two-compartment, 13" x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conv. belting.

SHOVELS AND CRANES

Lorain L-50J, 1-yd. Diesel Crane-Shovel-Hoe.
Lorain L-20, ¾-yd. diesel dragline. Excellent.
Lorain TL-25, ¾-yd. diesel backhoe.
Lima 34 Paymaster ¾-yd. diesel shovel. Good.
Unit 1020 ¾-yd. diesel powered shovel.
Koehring 304, ¾-yd. diesel shovel-backhoe.
Northwest 20, ¾-yd. gas shovel.
Bucyrus-Erie 10B, ½-yd. Gas Shovel.
American 100, ½-yd. gas clam-backhoe.
Lorain MC-414, 20-ton Moto-Crane.
Link Belt HC-90, 25-ton truck crane.
Michigan TLDT-20, 15-ton truck crane.
Lorain MC-254, 15-ton Moto-crane.
Lorain TL-20, 10-ton Moto-crane.

TRUCKS

2—Euclid 13-yd. bottom dumps. Good.
2—Euclid 27FD, 15-ton rear dumps.
1—Euclid 6B FD, 15-ton rear dump.

TRACTORS

1—Caterpillar D-8 with cable Angledozer.
1—Caterpillar D-8 with push block
1—Caterpillar D-7 with bulldozer, crane boom.
1—Caterpillar D-7 with hydraulic angledozer.
1—Caterpillar D-4 tractor only.
2—Euclid TC-13, twin engine tractors.
1—International TD-24 with cable angledozer.
1—International 200 with loader, backhoe.
1—Letourneau Super C Tournadozer. Excellent.
1—Allis-Chalmers HD9-G Tractor with 2-yd. front end loader.

SCRAPERS

2—Allis Chalmers TS-360, 15-yd. overhung engine scrapers.
2—Euclid TS-24, 24-yd. twin engine scrapers
2—Euclid TS-18, 18-yd. twin engine scrapers.
3—Euclid 18-yd. overhung engine scrapers.
1—Euclid 15½-yd. six wheel scraper.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
1—Caterpillar 80 tractor-drawn scraper.

SHOVEL ATTACHMENTS

Osgood 903, 2-yd., 24' boom, 20'6" stick.
Lorain 26, ¾-yd., 19' boom, 16' stick.

GENERATOR SETS

Universal 5KW, D.C., 1200 RPM, 220-250 volts.
Century-Waukesha 15 KW, 1200 RPM, 3/60/127-220.
Century-Continental 15 KW, 1200 RPM, 3/60/120-208.
Cummins 25 KW, 1200 RPM, 3/60/120-208.
Caterpillar 40 KW, 1200 RPM, 3/60/220/440.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 PFM. Rebuilt.
Cat. D13000, 138 H.P. at 1000 RPM. Rebuilt.
GM 3021C, 3-cylinder, new.
GM 671, 6-cylinder. Rebuilt.

AIR COMPRESSORS

2—105 cu. ft. Ingersoll Rand gas portables.
3—125 cu. ft. Gardner-Denver gas portables.
160 cu. ft. Worthington gas portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand, Waukesha power.

L. B. SMITH, INC.

Camp Hill, Pa.

Phone Harrisburg REgent 7-3431

LIQUIDATION

COMPLETE CEMENT PLANT
AKRON, N. Y.

2—Allis Chalmers 8' x 100' Rotary Kiln.
1—Raymond 36" Bowl Mill, 50 HP.
1—Vulcan 6' x 50' Dryer, 25 HP.
1—Clyde #3 Hydrator with motor.
1—Raymond 16' Double Whizzer Separator, 75 HP.
14—Bucket Elevators, chain mounted, steel casing, 25' to 56' c.c.
1200'—9" and 14" Screw Conveyor.
15—Bins from 6'x7'6"x12" to 17'x20'x12'.
1—Steel Building, 60' x 80' x 40' high.
1—Steel Building, 65' x 125' x 40' high.
Miscellaneous: 500 tons Structural Steel; 2500 HP motors, 3/60/440 volt from 1 to 300 HP; Speed Reducers; Steel Grating.

OTHER LOCATIONS

ROTARY KILNS—DRYERS—COOLERS

1—Traylor 11' x 155' Rotary Kiln, 7/8" shell.
1—Allis Chalmers 9' x 130' Rotary Kiln, ¾" shell.
1—Vulcan 8' x 87', ½" shell.
2—Vulcan 7' x 80', ½" shell.
2—Link Belt Roto Louvre Dryers, 6'4" x 24'
1—Rennenberg 6' x 50', ⅜" shell.
1—Ruggles Cole 5' x 30', ⅜" shell.
1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', ⅜" shell.
1—34" x 30', 7/16" shell.

MILLS—CRUSHERS—PULVERIZERS

2—Traylor Compeb Mill 7' x 27' with 1—500 HP & 1—600 HP motor 3/60/440.
1—Hardinge 4½' x 24" Steel Conical Mill.
1—Denver 3' x 5' Continuous Ball Mill
1—Telsmith Reduction Crusher No. 46, 50 HP.
2—Kennedy #6 Gyratory Crushers, 50 HP.
5—Jaw Crushers 12" x 18" to 36" x 48".
1—Penn. Non-Clog Swing Hammermill, size 5060, 47" x 60", cap. 200—275 tons per hour, requires 400 HP motor UNUSED.
1—Penn. Super-Thor Hammermill, size SXT13, 250 HP.
3—Raymond 5 Roll Low Side Mills.

AIR SEPARATORS—SCREENS

1—18' dia. Raymond Double Whizzer Separator with 100 HP motor.
1—14' dia. Raymond Double Whizzer Separator with 60 HP motor.
1—Gayco 5' dia. mechanical Air Separator.
1—Raymond 30" dia. Whizzer Separator.
1—Tyler Hummer Screen 4' x 10' type 38 with V-52 Vibrators and Thermionic unit.

CONVEYORS

1—Fuller-Kinyon Conveying System type H257, 100 HP.
2—Fuller-Kinyon Conveying Systems type 10B-No. R, 75 HP.

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MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE

NUSSBAUM ELECTRIC COMPANY

220 E. Douglas Ave., Fort Wayne, Ind.

SPECIALS!!!

Buffalo type B 60 ton motor truck scales 45' x 12' platform, tape recorder and printer
Fuller-Kenyon Type "C" cement unloader.
Fuller Kenyon Airslide cement conveying system
Schram 600 ft. portable air compressor. GMC.
Gardner-Denver 600 ft. air compressor, portable.
Lorain Model L-50 shovel 1 yard. Diesel
Koehring Model 304, crane ⅝ yd.; 50' boom. Diesel
Hough Model HR Payloader. Diesel 1¼ yd.
Int. TD-142 Skid shovel 2¼ yd.

CONCRETE MIXERS

Koehring Model 16-E Twinbatch concrete paver
Ransome Model 848, 3 yd. tilting type
Koehring Model 56S 2 yard tilting type

TRUCKS—TRANSIT MIXERS

4 Mack B-62-S trucks, 12 yds. Heil dump bodies.
10 Euclid 28 FD rear dumps 15 ton cap. Cummins
13 Euclids rear dump 12 FD 15 ton; 7 Euclid bottom dump 43 RDT 18 ton
4 Jaeger Transit Mixers 5½ yd. HI-Dia. New 1957
3 Jaeger 5½ yd. HI-Dia. Autocar.
6 Worthington 7 yd. transit mixers on 6 cyl. Diesel.
Mack tandem trucks HI disc. Some new condition
8 Euclid Model 25 LDT, 25 yd., bottom dump

CRUSHERS—KILNS—DRYERS

JAW: Acme 10x20, 15x36, 14x24, 14x28, 10x42, 16x32, 18x32, 25x40. Eagle 10x16, 20x36. Diamond 24x36". Cedar Rapids 10x20, 15x36, 20x36, 25x40. Farrell 10x30, 15x30, 14x36, 18x36, 36x48. Buchanan Type C 30x42, 36x42. Traylor 14x36, 24x36. Allis-Chalmers 30x15. Good Reads 10x30. Telsmith 18x32. Universal 18x24.
GYRATORY: Al-Chal 6, 7½, 8, 9, 10, 12, 16, 18, 20". Telsmith TY 4', 3' Gyrosphere
25B Kennedy Van Saun 12, 37½, 93, 49¼"
ROLL: Cedar Rapids 40x20, Pioneer 40x22, 30x10, 54x24 triple roll; Telsmith 24x16. Universal 13x16
HAMMERMILL: Jeffrey Type BS 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Stedman 24x30, 36", 42". Cedar Rapids 50-50, 30x33, 30x43.
BALL MILL: Hardinge conical 10'x48", 8'x48". 8'x36", complete, motors, Traylor 7'x25'.
TUBE MILLS: Smidth 6'6"x21', 5½x30'.
ROD MILL: Marcy 3'x8' center discharge, 8'x8', Jackson & Church 4'x10'
AUTOCLAVES: J&C 6'6"x38' Quick Acting; 6'x30'
CONE: Symons 3', 4½' standard head coarse bowl
KILNS: 4'x42', 5'x36', 6'x50'6", 6'4"x45', 11'x155' Vulcan 9x106, 10'6"x105', 6'x126', 6'x96', 6'x72'.
DRYERS: 6'x30', 6'x72', 5'x24', 4'6"x32', 3'6"x30', 6'x28', 5'x25', 6'x24', 6'x40'.
COMPEB MILLS: A-C 7'x24', Patterson 7x18.
FEEDERS: Symtron F55 48x72", 48x60", Jeffrey 35x72". Telsmith 36"x14', Universal 36"x32'.

CRUSHING—WASHING—CLASSIFIER

Eagle Log Washer 48" x 20' Model BMD. New 1955. Used only 700 hours.
Pioneer Port. 10x24 jaw 24x16 roll compl. Diesel
C-R 2540 Prim. Port. Diesel
Pioneer Special 84, 10x24 Jaw 24x16 Roll. Diesel.
C-R Primary Port. 22x36 Jaw. Diesel.
Eagle 36x25" single screwspiral etc.
Diamond Wee-Con port. Primary 36"x36" crusher
C-R Port. Prim. 20x36" Diesel R. B.
Eagle Log Washer BM-D 4322 7'x21' Twin Prac. new.
Eagle 24"x25' dbl. screw washer 15 HP motor

CONCRETE PLANTS AND EQUIPMENT

Noble CA 354, 4 compts. Complete Large cap. 250
Johnson 2 agg. bins 50 tons ea.-cement silo 1500 bbls.
Erie-Strayer 120 ton aggr. bin 630 bbl silo ground storage 1200 bbl silo
B-K P2100 3 compt. aggr. Heltzel 450 bbl cement
Erie-Strayer P3 3 compt. 195 tons aggr. bin; cement silo 675 bbls. cement interlocking
Erie Strayer port. New 1955, 40 yds. per hr. 600 bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch 6000 bbl. silo S-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage S-2 yd mixers; screening equipment.
Johnson TY 218 2 compt. agg. w/TY1839 cement unit
Erie—Strayer 2, 50 T. compts. 350 bbls. cement 750 bbl. silo.
Johnson TY-227 70 cu. yd. 105 ton 3 compt. aggr. bin TY168 batcher.
Blaw-Knox BCPC 600 bbl cement silo
Blaw-Knox BCPC 300 bbl cement bin
B-K 3 Comp. 200 yd. ag. bin, cement silo 2000 bbls., 2 Koehring 56-S mixers.

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Morris 6" Diesel on 14'x36' hull
Ellicott 14" x 12" Steel Hull 64' x 22' Diesel.
10" Portable Diesel powered. Complete.
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2—7'6" x 100' long rotary kilns

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CRUSHERS—PULVERIZERS

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JAW, 36" x 15", 20" x 6" 18" x 9"
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RAYMOND, 6 Roll, Low Side, 200 HP
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3' Symons Shorthead Crusher
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___Trucks, Bulk Cement
___Trucks, Industrial
___Trucks, Mixer Body
___Trucks, Motor
___Valves
___Vibrators
___Welding and Cutting Equipment
___Winches
___Wire Cloth
___Wire Rope

If equipment you are in market for is not listed above, write it in space below.

The principal rock product(s) manufactured by my company is/are indicated "1", "2", "3", in order of importance below.

___Crushed Stone
___Sand & Gravel
___Slag
___Cement
___Lime
___Gypsum
___Ready Mix Concrete
___Concrete Products Type_____
Other nonmetallic mineral (What?)_____

All above information is strictly confidential to be used to guide the manufacturers in supplying proper information.

Please Check Service Desired

☐ Have Salesman Call ☐ Literature only
☐ Prices ☐ By mail ☐ Urgent

NOTE: See—Where to Buy-Classified Advertising Section for used equipment and complete plant information

Name_____
Title_____
Firm_____
Street & No._____
City and State_____
Your Signature_____ Title_____

FILL IN—TEAR OUT—MAIL NOW! *BUYER RESEARCH SERVICE DEPARTMENT:* ROCK PRODUCTS 79 W. Monroe St. Chicago 3, Illinois

WANTED
HELP — POSITIONS

DISTRICT SALES ENGINEER
(St. Louis, Missouri)

Prominent manufacturer of crusher and process machinery has challenging position for Sales and Service Representative with excellent opportunity for advancement. Must have minimum of 5 years heavy machinery sales experience in mining, crushed stone, sand and gravel, or cement industries. Prefer technical background in Mechanical, Metallurgical, or Mining Engineering.

Write stating age, education, experience, present employment and salary requirements. Replies strictly confidential.

Box R-82
Rock Products, 79 W. Monroe, Chicago 3, Illinois

DUNDEE CEMENT COMPANY REQUIRES
MAINTENANCE SUPERINTENDENT

to be responsible for planning, supervision and recording of all maintenance.

Applicants in their mid-thirties, with engineering background and maintenance experience in cement or related industries will be given preference.

Applications must be handwritten, and are to present personal, educational, and employment backgrounds. Address Plant Manager, P. O. Box 317, Dundee, Michigan.

Plant Maintenance Engineer, Mach./Elect. Engineer, 20 yrs. supervisory experience with heavy crushing & mining equipment, installations, maintenance, & operation. Will relocate. Resume available. Write: Box-79, Rock Products, 79 W. Monroe, Chicago 3, Ill.

Lightweight Aggregates Engineer

Experienced in rotary kiln and traveling grate processing. Has industry know-how including raw materials exploration, evaluation and development; plant design and lay-out; product testing, application and marketing. Box R-75 c/o Rock Products, 79 W. Monroe, Chicago 3, Illinois.

Wanted: Superintendent

for Crushed Stone Plant and Asphalt Plant in Western New York State. Write full information to Box R-65, Rock Products, 79 W. Monroe, Chicago 3, Illinois.

SITUATION WANTED

Superintendent and Production Manager experienced in all phases of quarring, along with black top and redi-mix operations desires position. Also fine record of maintenance for above type plants. Write: Box R-80, Rock Products, 79 W. Monroe, Chicago 3, Ill.

OPERATING EXECUTIVE

A medium sized Midwestern crushing, rock and gravel equipment, mining equipment and gray iron castings company is in need of a capable, middle aged or older operating executive. This opening has been occasioned by the recent death of one of its executives.

Company is 62 years old and during the past 10 years has been in the process of adding to, and building up its lines of manufacture along with many improvements in plant and equipment.

Box R-83, c/o Rock Products
79 W. Monroe St. Chicago 3, Illinois

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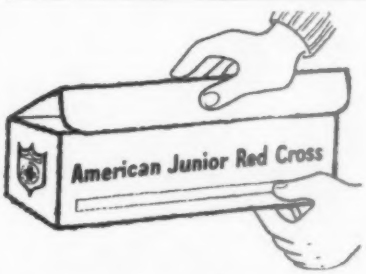

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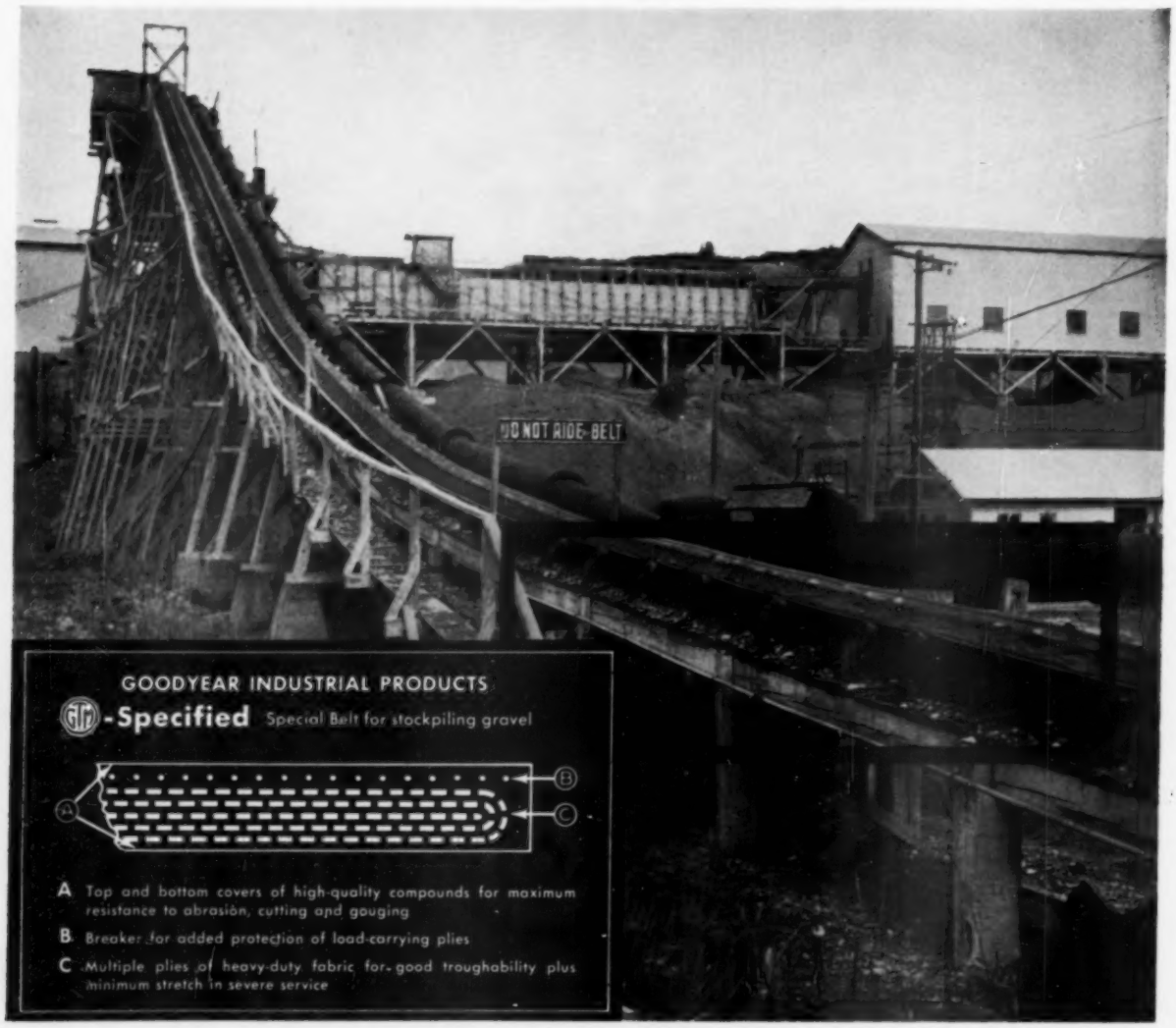
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